

**An Exploration of Normative and Predictive Expectations of
Bank Web site Features: A Tale of Two Task Scenarios**

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Declaration

I declare that I have composed this thesis, that the work in this thesis is my own and that the work has not been submitted for any other degree or professional qualification except as specified by the University of Edinburgh.

Signature.....

Date.....

Abstract

The aim of this thesis is to explore differences between consumer expectations of web site functionality in the context of online banking in terms of whether the task under consideration is information seeking or account access and whether the expectation is predictive or normative. The Internet has emerged as a new and distinct information source. Statistics show that the Internet is used extensively by companies for information provision and in general by consumers for information acquisition. The context of this study is the financial services sector where online service provision is increasing to meet consumer demand. Numerous studies into online banking seek to identify the attributes of successful financial services web sites but the focus of these studies has been on account management rather than information search activity. Yet, there is limited research into whether consumer evaluative criteria differ when deciding to adopt a bank's web site as a source of information as compared to use as a channel for account access.

Regardless of task focus, the rationale behind theory of adoption models is that, if after trial, web site performance does not match expectations then the consumer will decide that the web site does not contain features of value and will not continue to use it. Expectations are conceptually close to, but not the same as, beliefs and have been defined as both the anticipation of future outcomes (predictive expectation) and the desire for the occurrence of future outcomes (normative expectation). Since the only type of evaluation a consumer may hold about an untried technology is expectation, several technology adoption models use expectations as referent states however the focus of research to date has been on contrasting expectation with post-adoption perception.

This thesis follows an approach developed by Sirgy (1984) that utilises different levels of expectation. Normative and predictive expectations are used not only as a referent state but also as a perceived state thus providing an understanding of the expectation "gaps" of users and non-users. A two-phase methodology was used. First a preliminary study based on a convenience sample of 253 students was used to generate a range of expectation statements relating to online information search. Second a web-survey was administered to 10,000 Internet users to explore differences in normative (should) expectations and predictive (will) expectations across a set of system quality and information quality attributes in two task scenarios: information search and online bank account access.

This thesis identifies differences and points of similarity across task scenario. It shows that across task scenario there are statistically significant and practically substantive differences in terms of attributes that reduce risk, enable two-way communication and the provision of product information

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CHAPTER 1 INTRODUCTION

1.1 Chapter Introduction

This thesis explores the differences between consumer expectations of a bank's web site functionality in terms of whether the task under consideration is information seeking or account access and whether the expectation held is predictive or normative. The aim of the thesis is to develop a detailed scholarly understanding of the influence of task context upon web site evaluation. This introductory chapter has three objectives. First to inform on the background to the thesis, second to detail the scope and focus of the research and third to provide an overview of the thesis structure.

The chapter begins by examining and summarising the key characteristics of the Internet that distinguish it as a phenomenon worthy of interest. The chapter then discusses the characteristics of e-commerce with a focus on online service provision; presenting an overview of the key characteristics of services before exploring in greater depth the nature of e-service. There follows a section on the importance of information provision to consumers and the significance of online information provision. The chapter then introduces online banking as an example of an e-service and discusses the nature, characteristics and importance of online banking in the UK. The chapter then draws together arguments for research into consumer Internet use and in particular the reasons for a focus on e-service provision within the context of online banking and consideration of information search as a distinct activity. The chapter concludes with a statement of the main research aims and objectives and an overview of the thesis structure.

1.2 The Internet

The Internet is defined as a communications network of computers (Pattinson and Brown 1996; Prescott and Van Slyke 1997) that utilises a range of computing protocols including e-mail and the World Wide Web (WWW) (Hoffman and Novak 1995). The development of the Internet can be traced from 1991 when the creation

of Hypertext mark-up language enabled the sharing of documents over the World Wide Web (Todd 1999). Early use of the Internet required not only technical expertise but also access to computer hardware and software (Breitenbach and Van Doren 1998). However developments in software, the launch of the Netscape browser and the rise in the number of households with personal computers have contributed to an expansion of personal and commercial use (Pattinson and Brown 1996, Herbig and Hale 1997, Chaffey et al. 2000). Wyatt et al (2002:25) write that as result of these developments the Internet has become “potentially available to all.”

Indeed the use of the Internet in the UK has grown rapidly. For example, in 2007 over half of UK households had Internet access (61%, n = 15 million) which represents a 36% increase on those who had Internet access in 2002 and a 7% increase from the previous year (National Statistics 2007a). In terms of individual use, 67% (n = 31.8 million) UK adults have accessed the Internet, this is an increase of 14% from 2006 (National Statistics 2007).

The growth in Internet use amongst the UK population is reflected by growth in UK business use. For example, 63% of UK business had access to the Internet in 2000 (Williams 2001). In 2006 this had increased to 99% of large UK business and 88% of small business having Internet access (National Statistics 2007b). In 2006, 70% of businesses had their own or third party web sites compared to 61% in 2000 but growth is slowing (National Statistics 2007b). In terms of web site purpose, the majority of UK businesses (61.3%) use their web sites for marketing, 30% for price or product information and 16% for after sales support (National Statistics 2007b). Thus consumer-focused activity dominates both in terms of household and business to business markets.

It has been proposed that as the number of web sites increase there will be greater competition in attracting web site users (Mathur et al 1999, Yang et al 2003). Thus as the e-marketplace becomes more mature, organisations may need to be focused on developing a loyal customer base to maintain competitive advantage (Brassington & Pettitt 2007). It is of interest to note that those who are new adopters of the Internet 27% state that they would like to increase their use (National Statistics 2007a). Thus it can be argued that individuals perceive that Internet use is beneficial to them.

Amongst this group, the three most frequently cited specific barriers to increased Internet use are; “lack of time” (52%), “lack of skills or knowledge” (21%), “speed of connection” (12%) and “security or privacy concerns” (10%). Thus there are a variety of areas where action could be taken to facilitate individual use.

There remains, however, a third of the adult UK population who are not Internet users. Those in this group cite their reasons for non-adoption (57%) as “no desire to use” and “no perceived benefits from use” (Summerfield and Babb 2004). Other reasons underpinning non-use are given as: “lack of knowledge” (38%), “no Internet connection” (39%), “cost” (15%), “someone else uses for me” (14%), and “concern about security” (9%). Thus for certain individuals a combination of negative expectation, individual and situational constraints results in their rejection of this innovation.

The Internet offers “tremendous opportunity” in terms of increased choice and ease of access to consumers and for organisations the ability to expand into new markets, learn new skills and to compete on equal terms (Chaffey et al 2000:xi). Amongst consumers there are those who have adopted the Internet, those who would like to increase their use and those who have rejected the Internet. Whilst national surveys supply the frequency of a limited number of reasons for continued non-adoption and reduced use there is little exact knowledge of the factors that underpin these perceptions (Brown et al 2007). As Internet use grows, academics have been urged to move “beyond the hype” and to conduct “informed careful study” (Woolgar 2000:4).

A considerable knowledge gap exists between the practice of Internet-based marketing and the availability of sound, research-based insights and principles for guiding that practice (Parasuraman and Zinkhan (2002: 286).

Thus whilst the practitioner literature reports on the scope of Internet activity there remains a need for scholarly research which this thesis seeks to address in the context of services marketing.

1.3 E-Business, E-Commerce and E-Service

In services marketing, the use of technology as a method of access and providing service is a major trend that is driving growth and transforming practice (Zeithaml and Bitner 2000, Wilson et al 2008). The terms “Self-service technology” (SST) and “E-Service” have been introduced (Meuter et al 2000, Curran and Meuter 2005). SSTs are technologies that customers independently use in which service is provided without direct interaction with a human service agent (Meuter et al 2000). Several different SSTs have been adopted and developed for use by the service industry, for example ATMs, kiosks, telephone systems (Curran and Meuter 2005), among which the Internet is a relatively recent addition. SSTs can be used to deliver the core service product (for example ATMs) or to provide customer support (for example telephone help desks).

This sub-section gives an overview of the key characteristics of services as a precursor to a detailed discussion of the concept of e-service and the need for research in this area. It defines the terms e-Business, e-Commerce and e-Service. Several different terms have been used to define online commercial activity including e-business (Amor 2000), e-commerce (Chen 2001) and e-service (Voss 2000). Surjadajaja et al (2003: 39) attempt to clarify the differences in what they acknowledge is a “blurred area”. They propose that e-business is a broad term that is used for “conducting business through the Internet” (p 40) and it is this definition that is used in this thesis.

1.3.1 Characteristics of Services

There is limited consensus as to what precisely constitutes a service (Gabbott and Hogg 1994). However there is a general appreciation that a service is something without the physical presence of a good. For example Gummesson (1987: 22) refers to services as “something that can be bought and sold but which you cannot drop on your foot”. There have been several attempts to describe services in terms of a set of characteristics (Shostack 1977, Parasuraman et al 1985). Characteristics are commonly agreed as including; intangibility, inseparability, heterogeneity and perishability (Harrison 2000, Brassington and Pettitt 2007, Wilson et al 2008). Table

1.1 summarises these characteristics, the variation between goods and services and the implications.

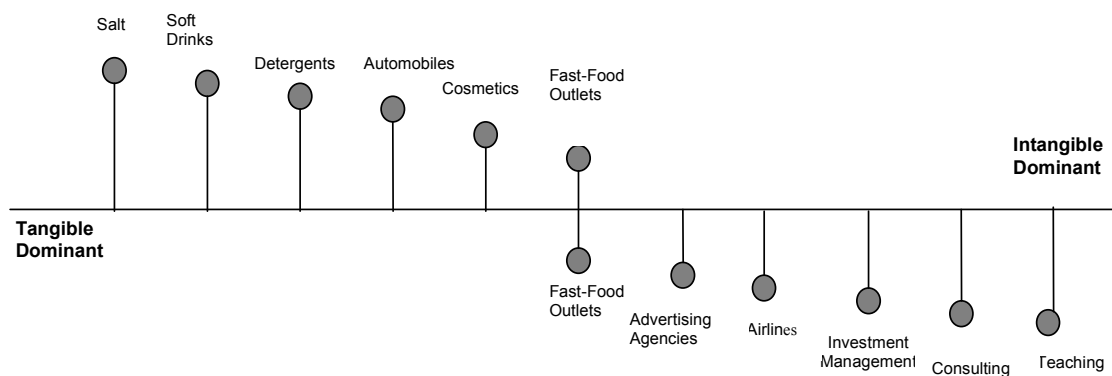
Table 1.1 Characteristics of Goods and Services

Goods	Services	Resulting Implications
Tangible	Intangible	Services cannot be inventoried Services cannot be easily patented Services cannot be displayed or communicated Pricing is difficult
Standardised	Heterogeneous	Service delivery and customer satisfaction depend on employee and customer actions Service quality depends on many uncontrollable factors There is no sure knowledge that the service delivered matches what was planned and promoted
Production is separate from consumption	Inseparability – simultaneous production and consumption	Customers participate in and affect the transaction Customers affect each other Employees affect the service outcome Decentralisation may be essential Mass production is difficult
Non-perishable	Perishable	It is difficult to synchronise supply and demand with services Services cannot be returned or resold

Source: Parasuraman et al (1985).

Intangibility is “the most basic and universally cited difference between goods and services” (Zeithaml and Bitner 2000:12). For example, Shostack (1977) outlines a spectrum that uses tangibility to differentiate goods from services (Figure 1.1).

Figure 1.1 Tangibility Spectrum



Source: Shostack (1977).

Research has shown that the degree of intangibility that a product possesses affects certain qualities that consumers use in pre and post purchase evaluation (Laroche et al 2001). Murray (1991) cites intangibility as increasing the difficulty of consumer evaluation of services. Services that are particularly complex such as professional and financial services may also be “mentally intangible” (Rushton and Carson 1989, Devlin 1998). Difficulty in evaluation introduces uncertainty in decision making and also the degree of perceived risk associated with a service transaction (Murray and Schlacter 1990, Howcroft and Beckett 1996).

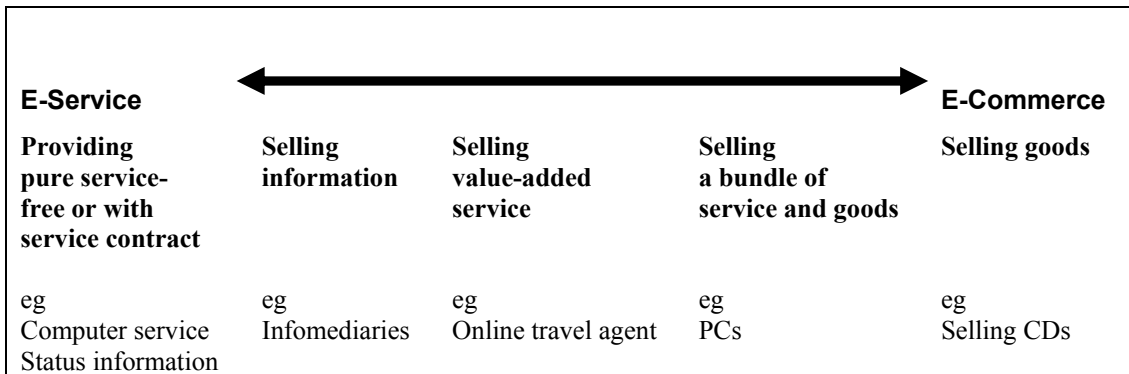
Service intangibility affects search, experience and credence attributes qualities (Nelson 1970, Darby and Karni 1973). Search attributes are those that a consumer may use to compare product offerings before purchase (Zeithaml and Bitner 2000, Srinivasan and Till 2002). Experience attributes are those that can be evaluated only during or after purchase (Zeithaml and Bitner 2000). Credence qualities are those elements that a consumer may not be able to evaluate even after purchase due a lack of specialised knowledge of what the purchase outcome should be (Darby and Karni 1973). Credence qualities might also be present due to the extreme heterogeneity of the outcome resulting in a lack of comparability with similar service experiences. For example, in the case of a course of medical treatment (Arora 2006) or financial service provision (Lovelock 1991).

In the case of products high in credence and experience qualities consumers may use other more tangible and easily understandable attributes as extrinsic clues upon which to base judgement (Olson and Jacoby 1972, Olson 1977, Babakus et al 2004). In some instances, search attributes (such as brand name and price) may be used to infer service quality (Krishnan and Hartline 2001). In the case of long-term service provision the quality of interactions between the customer and service provider may be used as tangible cues for judging the nature of the core service being provided (Zeithaml 1988, Ennew and Binks 1996, Devlin 1998, Stock and Lambert 2001). It is considered critical for services marketing to recognise and understand how consumer evaluation is influenced by service characteristics (Wilson et al 2008) and thus online service provision is warranted as a distinct area of study (Rowley 2006).

1.3.2 E-Service

Just as there is debate regarding definition within the services marketing so there is debate about precisely what constitutes an e-service (Rowley 2006). Voss presents a spectrum of e-business that draws on the tangibility spectrum proposed by Shostack (1977) (Figure 1.2).

Figure 1.2 E-Service and E-Commerce



Source: Voss (2000: 21)

Voss states that one end of the spectrum consists of “pure sales on the web, with little or no service content” whilst on the other end there is:

pure service delivered free or as part of a service contract, in between there are valued-added services such as travel agents and products sold with a high service content (p21).

In Voss’s definition the nature of e-commerce as the selling of goods is emphasised however e-service has a less precise conceptualisation as being that which “may be delivered with e-commerce alone, either unconditionally or with a service contract” (Rowley 2006: 341). Drawing on the extant literature it is possible to delineate three conceptualisations of an e-service: e-service as that which is provided by the technology interface used when making purchase, e-service as the provision of a product in digital format and e-service as online customer support for the purchase process.

E-service has been considered as comprising the technology offering of the Internet. For example, Rust and Lemon (2001: 85) argue that the Internet “by its very nature”

is a service since it is a network of technology exchanging intangible information. Stafford (2003: 28) also argues that “technologists naturally view e-services as web-delivered software functionality”. Thus the e-service provision is the e-technology itself. E-service has also been considered as the provision of a product in a digital format (e-product) since the product is now provided in an intangible form. For example, Laroche et al (2005) include as a definition of e-service the provision of a digital service product (such as download of music or a software programme).

E-service has also been conceptualised as the online provision of customer support (e-support). Rowley (2006: 341) defines e-service as customer support for online purchase that includes “the service element of e-tailing, customer support and service, and service delivery”. Stafford (2003: 28) also states that within the marketing discipline e-service is considered to be “any electronically enabled aspect of customer utility”. Wilson et al (2008:) extend e-support to include the online activity in support of a purchase whether it is made on or offline. They outline a range of different activities as follows:

basic customer service functions (bill-paying, questions, cheque account records, tracking orders), transactions (both retail and business to business) and learning or information seeking (p12).

In addition, researchers have suggested that consumers may seek support for an offline purchase online and an online purchase offline, and that service provision might be sought wholly online, wholly offline or using a combination of the both channels within or between different activities (Waite 2006, van Dijk 2007).

Several researchers have simultaneously utilised the conceptualisation of e-services as the user-interface, core product, and purchase support (ie. Gronroos et al 2000, Van Riel et al 2001). For example, Gronroos et al (2000) propose a NetOffer model that divides e-service into a functional dimension (the service outcome) and the technical dimension (the service process, that includes the technology system). The model is formulated to account for the online purchase of cinema tickets. However the NetOffer model does not address e-support activity that may proceed the service contract, such as information seeking (Bauer et al 2006) and focuses on offline customer support.

Drawing on services marketing theory which posits that interaction quality is used as a tangible cue for judging the nature of the core service there has been investigation into how the different elements of e-service influence adoption. For example there are indications that poor e-service in the form of technological functionality weakens organisational credibility since the web interface is used as a tangible cue for the service to be provided (Zeithaml et al 2002). For example through web site use:

the customer may encounter or learn about the service organisation, in question. Since services are experiential, each of these elements offers clues about the nature and quality of the service product (Lovelock 1991: 17).

In particular, Shim et al (2001) find that online information seeking often precedes online purchase and conclude that the experience of online information provision influences consumer intention to engage more fully with the service provider. Dellaert and Kahn (1999), when investigating the impact of download waiting time, show that web site users are able to separate their evaluations of an online shopping experience into discrete stages and that negative effects of failure at one stage of an e-service can be mitigated by positive performance at another stage. The impact of consumer evaluation of the web site interface on subsequent behaviour has even resulted in claims that SSTs are one way to increase the tangibility of a service (Gronroos et al 2000).

Within the Information Systems discipline several researchers have found that a fit between task requirements and technology functionality increases the likelihood of high levels of use and leads to better task outcomes (Benslimane et al 2003, Garrity et al 2005). However, Choudhury and Karahanna (2008:180) argue that previous research into the factors affecting online purchase have been limited by their conceptualisation of the “purchase process as monolithic and the adoption of electronic channels as unitary”. Thus it is argued that a task-orientated approach to e-services marketing research will provide richer diagnostic information (Cai and Jun 2003, Bauer et al 2006, Dean 2008).

Thus this thesis takes a differentiated approach to defining e-service that is consistent with work by Gronroos et al (2000) and Van Riel et al 2001. It focuses on web site

functionality and e-support as aspects of e-service that require more detailed research. Drawing on approaches found within Information Systems (IS) research, this study compares Internet users expectation of web site functionality for information search and transaction. It is proposed that a research approach that focuses on different elements of customer support will contribute to practitioner understanding and organisational effectiveness.

1.4 Online Information Provision

Information search is an influential stage in the consumer decision-making process. Consumers use information to decide whether to purchase or re-purchase a product or service. Information is defined as relevant data about choice alternatives. For example, attributes and prices, the accessibility of distribution channels, comparative evaluations by consumer organisations and the experiences of other consumers, (Evans et al 2001). Data may be presented verbally, pictorially or in written form and may originate from marketing sources, personal sources or neutral sources. Evans et al (2001) argue that data becomes information because it is relevant to the individual consumer engaged in decision-making.

There are implications, both at an individual and systemic level, when the provision of information is inadequate. These can be summarised as the mis-selling of products, the mis-buying of products and marketplace dysfunction.

- Mis-selling. Uninformed consumers are vulnerable to exploitation or mis-selling. Inefficient information distribution reduces price competition, increases seller market power and increases the opportunity for exorbitant profits. Bakos (1997) notes that efficient information provision is necessary to maintain the competitiveness of markets.
- Mis-buying. Uninformed consumers may mis-buy products thus making inefficient or even harmful choices (Beales et al 1981). When information is difficult to acquire and to process, customers often do not expend sufficient information gathering effort in order to make fully informed decisions, (Friedman & Rees, 1988).

- Marketplace dysfunction. Finally information enables the formation of trust which in turn reduces uncertainty and introduces predictability and stability in the functioning of markets, (Gambetta, 1988; Misztal, 1996). Trust-rich environments avoid the costs incurred in those where transactions take place in the absence of trust. When there is an absence of trust the marketplace becomes dysfunctional and transactions will only take place under a series of rules and regulations that have to be negotiated, agreed to, litigated and enforced, (Fukuyama, 1995). This increases transaction costs and impairs economic performance.

These issues have resulted in information provision and consumer education being a subject of public policy. For example, legislation within the financial services sector has a statutory objective of consumer education through “promoting public understanding” (Harrison, 2000). In addition, the Government’s White Paper “Modern Markets: Confident Consumers” emphasises the need for good, reliable information to be widely available, (Department of Trade and Industry, 1999). Maynes (1979) proposes that consumers need information on: the existence of various product alternatives, general information on the advantages and disadvantages of purchasing particular products, quality information on particular brands, product price and terms of sale, and a general understanding of the functioning of consumer markets.

The Internet has emerged as a new and distinct information source and its development can be traced from 1991 when the creation of Hypertext mark-up language enabled the sharing of documents over the World Wide Web (Todd 1999). The unique characteristics of the Internet have led to Hoffman and Novak (1996a) to note that it is a “many to many” information source in which consumers can interact with the medium and firms can provide content to the medium. They identify this as the “most radical departure from traditional marketing environments” since consumers can provide commercially orientated content to the medium for use by other consumers and suppliers. This places the Internet as both a consumer and marketer dominated information source.

Information search, whether on or offline can reduce uncertainty regarding product choice. Consumers seek information to reduce pre-purchase uncertainty and risk and to conduct post-purchase evaluation, in order to confirm that the purchase decision was appropriate (Brassington and Pettitt 2007). There are several models describing how consumers use information in decision making, the most prominent being those proposed by Howard and Sheth (1969), Newman and Staelin (1972) and Maynes (1979). The five stages that consistently occur in these models are: problem recognition, information search, evaluation of alternatives, purchase decision and post-purchase evaluation.

Consumer information sources can be classified into two types:

1. Internal, i.e. memory, a low cost source of information,
2. External i.e. these include but are not limited to advertising, promotional literature, consumer reports, sales staff and word of mouth i.e. the consumer's family and friends. These all involve some form of consumer cost to access; whether financial, temporal or behavioural.

Beales et al (1981) note that memory content is a combination of prior experience that has either been actively acquired from previous external search or usage of the product and passively acquired information from day-to-day exposure to external information sources. Therefore external sources provide the foundations for all search activity. However the extent to which consumers will seek external information may be influenced by the "cost vs. utility" rationale advanced by Stigler (1961). The rationale states that consumers will not search extensively where the cost of acquiring information, in terms of time taken and resources required (both financial and cognitive), is greater than the perceived risk of mis-buying a product or service.

Information sources, such as the Internet, which are easy to access and use, are argued as encouraging consumer information search activity (Hoffman and Novak 1996a). Several researchers argue that the Internet is a vital source of consumer information due to its ability to offer: customisation of content, quality and quantity

of information in relation to the cost and increased accessibility (Ainscough and Luckett 1996, Rust et al 1996, Evans and Wurster 1997, Van Raij 1998). In addition there is evidence that the relative advantage of the Internet resides largely in its ability to gratify the need for information (Ducoffe 1996, Korgaonkar and Wolin 1999, Grant 2006).

Nelson (1974) argues that information both persuades customers to choose a product and influences their beliefs and attitudes about the market. It can also be argued that web site functionality provides consumers with tangible cues as to the nature of the service about to be provided, thus it is important that research is undertaken to pinpoint the e-support that consumers expect when using a web site for activities other than transaction. Therefore it is important to understand the features that will encourage customers to use this medium. However to date whilst studies have focused either on online information search or online transactions there has been limited research that explores both task contexts (Gefen and Straub 2000, McKinney et al 2002, Lassar and Dandapani 2003, Bauer et al 2006). It is this research gap that this thesis seeks to address.

1.5 Study Context: Online Banking

The financial services industry is of individual and economic importance. Financial services are important for the individual consumer, since if one is economically active then there is little alternative to their use (Davies 1996). Financial services contribute significantly to UK economic growth and employment. The gross added value to the UK economy by the financial services industry was £89.1 million in 2006 (The Blue Book 2007) and the value of net exports was £25.1 billion (The Pink Book 2007). For 2006 the number of people in financial services employment was 1.07 million (British Bankers Association 2007).

The financial services sector was chosen as the context for this enquiry, as an area where technological development has had a dramatic impact on the distribution of an established service within an important industry sector (Howcroft and Beckett 1996). Banks use Internet technology to operate either partially or wholly online. Hybrid banks use the Internet in conjunction with other traditional or electronic channels.

Internet only or stand-alone banks have no other method of customer contact other than the Internet (Furst et al 2002). This thesis does not differentiate between these different approaches to using the Internet but examines all banks who have a web site.

This thesis concentrates on retail banking, which is a distinct branch of financial service operations. Retail banking distribution methods have changed in response to various external and internal forces that have increased competition and change within the retail-banking sector (Jayawardhena and Foley 2000). Moore (2000: 25) characterises the nature of this change as follows:

The basic types of services provided by retail financial service organisations have not changed enormously during the past century and a half. The methods by which these services are delivered, the culture of the organisations that provide them, and the expectations, which customers have from them have changed, and to a phenomenal extent.

Retail banking is the provision of banking services involving relatively low denominations to individual customers, whereas large-denomination transactions with business and high-net worth individuals are defined as wholesale banking (Valentine 1999). Retail banking products include: current accounts, savings accounts, credit cards, loans and investment services such as share dealing and are widely used. For example, the Office for National Statistics (ONS) reports that 92% of UK households have at least one adult member with one retail banking product (ONS 2005a).

Whilst there are a range of retail-banking products that use online distribution this thesis focuses exclusively on the current account as a core service. The current account was selected as one subject of enquiry because of its ubiquity and its importance in establishing a marketing relationship between the customer and the institution. A current account enables consumers to: make or receive payment, store and deposit cash and borrow money through an overdraft facility (Carrington et al. 1997). In the UK, 91% of all adults have at least one current account (NTC 2006). Datamonitor (2004: 3) describes how current accounts are central to both meeting consumer day to day needs and bank marketing requirements:

Current accounts are designed to provide customers with the functionality and flexibility to run their personal finances on a day to day basis. As the primary conduit through which an individual manages their finances, the provision of a current account therefore provides a bank with a point of regular customer contact and access to the very heart of an individual's money management activities. ...the product is generally viewed as a gateway through which a bank can look to sell further financial products and services.

1.5 1 Definition of Online Banking

There has been a lack of precision in the use of the terms applied to web-based banking activity. Electronic banking is defined as establishing an electronic connection between bank and customers in order to prepare, manage and control financial transactions. (Daniel 1999). Thus electronic banking (or e-banking) is a global term that refers to banking activity using one or several of a variety communication platforms (Cheng et al 2006). For example electronic banking may be conducted over the World Wide Web, the telecommunications network or cable and satellite systems with a variety of devices, for example a computer, mobile phone, television or telephone.

Online banking is one form of electronic banking. It is important to differentiate online banking from PC banking, which is also one form of electronic banking. PC Banking refers to using a PC or special terminal to link directly to the bank's own server using a modem. This form of banking was pioneered in 1985 by the Bank of Scotland (Saville 1996) but has since largely been superseded in the UK by web site provision. Latterly the term PC banking is used to denote using a PC to manipulate financial information offline (Lustsik 2003). Financial services researchers have used the terms Internet banking, e-banking, web-based banking and online banking inter-changeably or in parallel (Karjaluo et al. 2002). This thesis uses the term online banking.

1.5.2 Online Banking as an E-Service

Banking is information intensive (Tan and Teo 2000, Shih and Fang 2007). Lovelock (1991:15) characterises financial services as an information processing

service “that does not require the customer’s physical presence from an operational perspective”. Eisingerich and Bell (2007: 254) describe a financial service as being:

both highly complex and highly intangible. Because clients not only lack a concrete object but may also lack the technical knowledge and experience, technical service outcomes are intrinsically difficult for customers to confidently evaluate even after purchase. Further, the long or indefinite time horizon of financial service delivery and the potential for high variability in performance introduces a high level of uncertainty in the relational context.

Whilst a customer is not required to be present to experience the outcomes of a banking service, Lovelock (1991:15) notes that direct experience of tangible elements engenders trust. High street branches have traditionally been the main channel for retail banking products. The physical presence and premium location of a branch network acts as a tangible, search attribute. Thus a branch not only provides the consumer with convenient geographic access and the provision of face to face advice but also an indication of a high level of resources which in turn communicates security (Lockett and Littler 1997). When using online banking the e-technology is considered as acting as a tangible, search attribute in a similar way to a branch (Aladwani 2001, Mukherjee and Nath 2003).

Several researchers have emphasised that good quality e-service in the form of e-technology is particularly important in encouraging consumers to adopt online banking (Joseph et al 1999, Chou and Chou 2000, Jayawardhena 2004, Ibrahim et al 2006). Moreover, given the fact that a financial service is delivered in a series of transactions over time, “delivery channels within the financial services sector also have a long term continuing maintenance role, which is fairly unique to the sector” (Howcroft et al 2002:112). Thus online banking is an example where a SST is being used to provide e-support for a pure service high in credence and experience attributes (Durkin 2004).

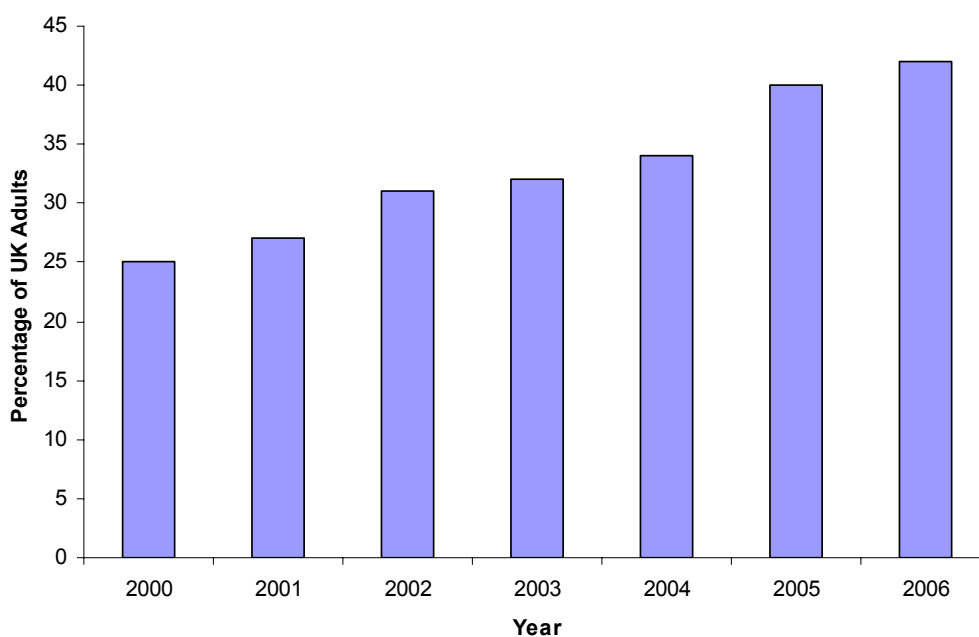
1.5.3 Consumer Adoption of Online Banking

The penetration of online banking amongst the UK population is low compared to other forms of remote delivery and there have been repeated calls for research to

identify the factors that determine user acceptance of online banking (Durkin and O'Donnell 2005, Pikkarainen et al 2006). For example, 92% of adults have a current account and 21% use online banking compared to 61% of current account holders who use ATMs (NTC 2006). There is evidence that customers do not rely exclusively on one channel. For example, in 2000, Datamonitor (2000a) reported that the proportions of those who had contacted their bank account in the last three months by channel were: 65.2% branch, 44.1% telephone, 23.5% post, 8.7% internet and 0.9% interactive TV.

Acceptance of the Internet underpins adoption as online banking is more prevalent and is increasing amongst Internet users (Figure 1.3).

Figure 1.3 Internet Access for Personal Banking or Financial Services



Source: (ONS 2006d)

For example, 45 % of adults who have accessed the Internet in the previous 3 months reported that they did so for online banking (National Statistics 2007a). The primary users of the Internet are male, those aged 16-34 and the higher socio-economic

groups. This is important in terms of profitability for the providers of financial services. For example, Mintel (2006:iii) notes that:

It is highly propitious.. that the key target groups for financial companies operation online – i.e. the more affluent and financially active sections of the consumer base are also the most likely to be heavy users of the Internet.

Online banking is also related to frequency of Internet use. For example 55% of heavy users report having or being registered for an online current account compared to 43% of medium users and 31% of light users (Mintel 2006). However it should be noted that online banking is not yet undertaken to the same level as other online activity such as finding out information about goods or services (84%), using e-mail (82%), general browsing (73%) or searching for information about travel and accommodation (72%).

Given the link between Internet use and online banking the demographic profile of those who bank online is similar to the profile of those who use the Internet. For example, currently 29% of men hold an online current account compared to 22% of women (Mintel 2006). In 2007 amongst recent Internet users 46% of men and 43% of women had used the Internet for online banking (National Statistics 2007a). These figures reflect the composition of the Internet user population of which 52% are men and 48% are women (Mintel 2006). However whilst there is information that describes who undertakes online banking there is very little additional detail on patterns of perception or motivation amongst these subgroups.

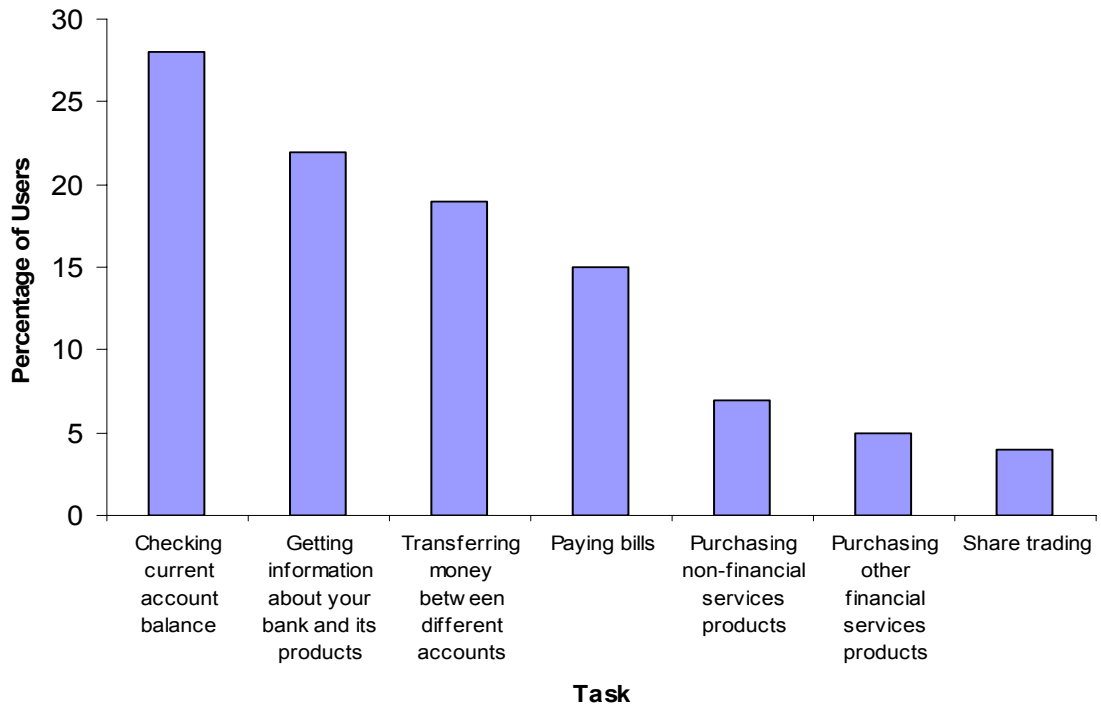
There are various banking tasks that can be undertaken online (Figure 1.4) however the frequencies with which tasks are undertaken varies. Saythe (1999) outlines the range of e-service that can be offered as:

At the basic level...the setting up of a Web page by a bank to give information about its products and services. At an advanced level, it involves the provision of facilities such as accessing accounts, funds transfer, and buying financial products or services online. (p 324)

In the UK the task most frequently undertaken online is the checking of account balances with 28% of respondents ranking this service first in terms of frequency of

use (Datamonitor 2000b). The second most popular task is searching for information about the bank or its products. Mintel (2006) report that 25% of Internet users have browsed bank web sites for information purposes but only 7% of Internet users have purchased products from bank web sites which indicates a low conversion rate.

Figure 1.4 Banking Tasks Most Frequently Undertaken Online



Source Datamonitor (2000b)

It is clear that the adoption of online account holding could be greater amongst Internet users. In addition, there is disparity in the frequency with which banking tasks are undertaken online. It is important for financial institutions to encourage adoption of online banking, not only to meet the needs of a profitable consumer segment but also in order to generate a return on the large sums of money invested not only in absolute terms but also as a percentage of their IT budget on Internet initiatives (Ernst and Young, 1999). Tan and Teo (2000) argue that online banking is a competitive necessity in terms of service differentiation. In addition, Devlin and

Gerrard (2004) conclude that as home banking (of which online banking is a form) matures then it will become a factor that consumers expect all banks to offer.

Hitt et al (1998) note that, unless online banking is adopted by the majority of customers, retail banks will be burdened with the additional cost of running yet another channel and thus operating costs will increase. Durkin and Howcroft (2003:63) identify financial provider concern over “spiralling costs” and limited customer interest in adoption particularly amongst Internet-only bank operators. However, knowledge is incomplete of customer expectations, perceptions and behaviours with regards to SSTs and increased understanding is needed of what influences and inhibits online banking adoption and use (Durkin et al 2008).

1.6 Need for Research

With the growth of the Internet, researchers have sought to formulate and extend theory for the online context (for extensive overviews see Ngai and Wat 2002, Ngai 2003, Kimiloglu 2004). Early attempts at Internet research were didactic studies (Kimiloglu 2004) that aimed to provide an overview of the technology (see for example, Paul 1996, Prescott and Van Slyke 1997). As the field of study developed the literature has been categorised as either; focusing on technical aspects, providing practitioner advice or seeking to test and develop theory (Sindhav 1998, Kimiloglu 2004).

This thesis focuses on the study of e-services as a relatively new area of research (Rust and Lemon 2001, Nah and Davis 2002), with early studies dating from 1999 (Rowley 2006, van Dijk 2007). Van Riel et al (2001: 359) note that “there is a clear need to develop a better understanding of how consumers evaluate [online] services”. Several researchers have found the use of technology in service delivery as problematical. For example the absence of face-to-face contact has lead to it being viewed as an “impoverished” exchange (Rowley 2006: 341). Thus much of the work within services research has focused on the interpersonal nature of the service encounters (Parasuraman and Grewal 2000, Bauer et al 2006). Hence, whilst there is a considerable body of research into consumer evaluation of services in traditional settings (Rust and Lemon 2001) there are limits to current understanding of the

interaction between services customers and technology (Parasuraman and Grewal 2000, van Riel et al 2001, Santos 2003).

There is a continuing need for research that focuses on consumer use of the Internet. For example, in an extensive literature review Brown et al (2007) found that, whilst there were many examples of US and international studies, UK-based research was relatively rarer and that academic study was fragmented in terms of both scope and theoretical approach. Investigation into user acceptance of new technology is a mature research area within Information Systems research (Taylor and Todd 1995, Venkatesh et al 2003, Wixom and Todd 2005). However, the main focus of this research has been on organisational use of technology and information systems for management decision-making (Dillon and Morris 1996). Brown et al (2007) conclude that whilst research proliferates “there are still important areas left unexplored and this may be leading to missed opportunities” (p162). Thus there is a need to critically evaluate the extent to which IS knowledge can be applied to consumer use of the Internet.

In terms of e-support for information seeking, there has been continued interest from the UK government in discovering whether the Internet is a useful tool for consumer information provision (Gunter 2003, Barnes and Vidgen 2004,). Rust and Lemon (2001: 86) propose that information provision is the “true nature of e-service... with customer wants and needs going in one direction and highly customised information going in the other direction”. In terms of individual use the most frequently undertaken online activity is searching for information about goods or services at 86%, whilst only 53% of adults have ever purchased goods or services online (National Statistics 2007a).

Negash et al (2003) when examining e-support find that the quality of information provided to customers underpins overall effectiveness of service provision. However, despite several programmes of ESRC research (i.e. Virtual Society 1997, e-Society 2003), it is still uncertain to what extent current online information provision meets consumer requirements (Harrison et al 2006). Thus this thesis adopts a systematic and theoretically informed approach in order to investigate

online information provision as one phase of e-support and compares this with consumer perceptions of support for account access.

Financial services marketing has only emerged as a distinct field of study in recent years despite the economic and social importance of the financial services sector. For example the International Journal of Bank Marketing was first launched in 1983, and therefore the body of literature is underdeveloped compared to other fields. Whilst there has been significant academic interest in online banking (Maenpaa et al 2008), there are gaps in the understanding of the factors that determine adoption and the subsequent frequency and intensity of bank web site use (Lympelopoulos and Chaniotakis 2005, Lee et al 2005, Shih and Fang 2006, Durkin et al 2008).

Very few online banking studies have examined discrete stages within online banking provision. One study by Akawami (2005) examined the process of opening a student account online finding that online banking involves a series of tasks that are “co-produced by the consumers themselves, directly on the bank’s web site” (p 46). This study concludes that it is necessary for a web site to be designed so that a consumer will find it easy to use. However this study “did not survey customers’ perceptions of using e-banking process operations” (p 47).

In a recent study into online insurance purchase, Choudhury and Karahanna (2008) investigate how consumers evaluate the benefits that a web site offers at different transactional stages. They found that:

consumers considered the relative advantage of using the web site at two distinct stages of online purchase: gathering information and executing the transaction.

However this study used a hypothetical scenario to gather data amongst college staff and whilst it included stages for information search, obtaining a quote, purchase and filing a claim it did not include post-purchase activities such as making a complaint or updating policy details.

The Financial Services sector use of the Internet to provide information is growing in significance and there is evidence that the Internet is replacing conventional sources of consumer information (Harrison and Waite 2005). The adequate provision of

information to facilitate financial services consumer decision making is of particular importance due to: the levels of risk due to the significance of financial services for the individual and the high levels of uncertainty due to product complexity and differentiation. The characteristics of the Internet as a source of information indicate that it will facilitate information search if it is utilised by consumers.

Thus this study examines how web site design features influence consumer adoption and use of a bank's web site for two e-support tasks: information search and account access. This area of research is important and relevant to practitioners in terms of helping to identify the barriers to online banking growth and informing the development and marketing of online banking services.

The study has three objectives that when taken together aim to provide a contextualised understanding of individual expectation of web site attributes for two different phases of e-service since "the design of the site affects the level of customer service the site delivers" (Chaffey et al 2000:232). The objectives are:

1. To identify any differences in expectations of banking consumers using self-service technology for two phases of customer e-service: information provision and account access.
2. To explore the relationship between consumer expectations of the presence of selected technology attributes and self-service technology utilisation intentions for task-specific online activity.
3. To explore the nature of any differences between task and between expectation levels according to selected individual socio-demographic, situational, attitudinal and behavioural characteristics.

1.7 Thesis Structure

This thesis is divided into seven chapters. Chapter 1 has provided an overview of the research disciplines that inform the thesis and has provided information on the context of the study.

Chapter 2 provides a critical evaluation of the research literature and is divided into three sections. The review develops an awareness of knowledge within the field of enquiry and evaluates its sufficiency. Gefen et al (2003) note that when a consumer uses a web site there is both an IT interaction (in terms of computing equipment and software) and a marketing interaction (in terms of information provision, transacting and resultant perceptions of company brand and image). Thus this thesis draws on literature from both Marketing and Information Systems (IS) disciplines.

Three research perspectives found within the IS literature are used to develop an analytical framework to classify and evaluate online banking research. This chapter gives direction in terms of the nature of additional study required in the field and insight into the appropriate forms of data collection and analysis techniques to employ in the later stages of the research. It provides understanding of the strengths and weaknesses of the theoretical underpinning of online banking research and thus contributes towards the development of the research propositions.

Chapter 3 details the methodology of the study and positions the research ontologically and epistemologically. This chapter addresses research issues, methods and choices. It contributes to the thesis by providing a detailed description of the path that was taken in order to advance knowledge in the research area. It presents an overview of the phases of data collection, the philosophical orientation of the thesis and how this influences the choice of research strategy. It details the conduct of research and focuses on: data collection procedures, sampling strategy, research instrument development and data analysis techniques. The chapter concludes with a consideration of the overall research approach.

Chapter 4 describes the preliminary research undertaken to develop specific e-support variables for information search. In the absence of a suitable body of literature to guide the research it is appropriate to commence with two exploratory studies. The preliminary research utilises both qualitative (focus groups) and quantitative (survey) data collection and analysis techniques. The preliminary research generates insight into consumers' online information seeking expectation and the findings inform the Phase 3 study.

Chapter 5 reports on Phase 3 that explores the differences in response between information search and account access task scenarios. This chapter reports on data collection, preparation and assessment and presents a descriptive report of the achieved sample. The analysis undertaken explores differences according to task in normative expectation, calculates and compares the “fit” between predictive and normative expectation for each task condition. Exploratory factor analysis is used to explore the dimensionality of expectation “fit” according to task scenario and factor scores are used in regression models to explore the relationship between expectation fit, task-related risk and task intention.

Chapter 6 summarises the main findings of the research and discusses the implications of the main study findings for financial institutions, for policy and for academic research. This chapter also identifies the limitations of the research approach and formulates recommendations for future research.

1.8 Chapter Conclusion

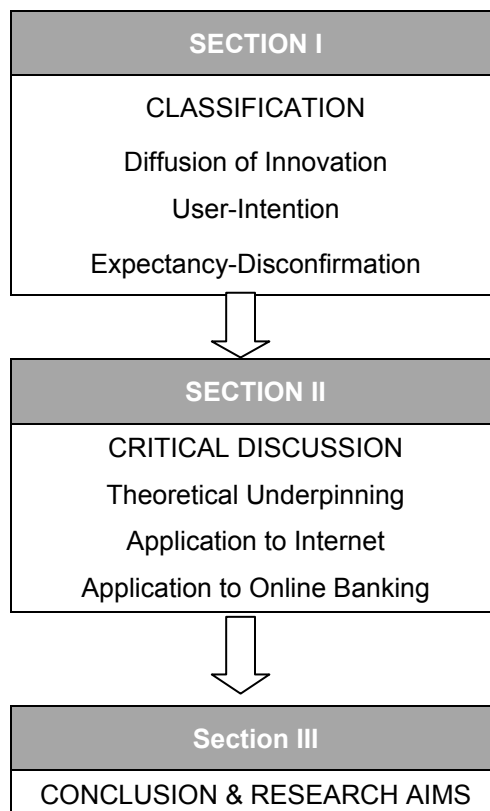
This chapter has discussed the basis for the thesis to be advanced. It has introduced the research context and provided a rationale for the focus of the research. The scope and purpose of the thesis have been detailed and the following chapters build upon this foundation.

CHAPTER 2 LITERATURE REVIEW

2.1 Chapter Introduction

This chapter presents a review of research into online banking adoption. The aim is to develop an awareness of knowledge within the field of enquiry and to evaluate its sufficiency. The review examines the substance of extant research and the orientation of the research activity in terms of research approach, sampling procedure and choice of analytical technique. The review process, through the identification of areas of strength and weakness, provides a foundation from which advances in knowledge can be made. The chapter is divided into three sections (Figure 2.1).

Figure 2.1 Review Structure



Section I classifies and quantifies online banking research according to three perspectives on new technology adoption drawn from Information Systems (IS) literature: a Diffusion of Innovation Perspective, a User-Intention Perspective and an Expectancy-Disconfirmation Perspective. This section begins with an overview of the review methodology and introduces each research perspective. It then quantifies the number of studies found within each research perspective and the frequency of research design components. Thus Section I highlights trends and direction within the field by providing a cross-sectional representation of the volume, nature and range of online banking research.

Section II develops the research overview compiled in Section I. It is divided into three subsections, one for each research perspective. Each subsection provides an explanation of the theoretical underpinning for the perspective and outlines how it has been applied to Internet adoption research. It then discusses where, within each perspective, online banking research has advanced understanding and where there are critical aspects of adoption behaviour that are unexplored (Stebbins 2001). Thus Section II taken as a whole provides a deeper qualitative analysis of research and complements the preceding quantitative analysis of the literature.

Section III summarises where areas of weakness can be identified through the quantitative and qualitative analysis of the literature. It then proposes research to address these deficiencies. It concludes with an identification of research aims that guide the subsequent research.

This chapter contributes in several ways towards the development and direction of the thesis. Section I provides direction in terms of the nature of additional study required in the field and insight into the appropriate forms of data collection and analysis techniques to employ in the later stages of the research. Section II provides an understanding of the strengths and weaknesses of the theoretical underpinning of online banking research and thus contributes towards the development of the research propositions given in Section III.

Section I Review Process

2.2 Section Introduction

Section I uses a typology drawn from the IS literature to summarise a large and growing body of online banking research. This section begins by presenting the rationale for employing a classification scheme and outlines the three research perspectives that form the core of the classification scheme. It then presents an account of the review procedure in terms of study selection and classification. The section next reports on the frequency of each research perspective, research design and analytical technique. The section concludes with a summary and discussion of the findings.

2.3 Research Perspective Typology

A typology groups objects using one or two attributes that are identified through deductive reasoning, to construct a qualitative, context-dependent classification system (Lewis-Beck 1994). In contrast, a taxonomy is a generalisable classification schema that utilises all available attributes in inductive quantitative analysis (Bailey 1994). The classification of objects on the basis of similarity provides a foundation for developing knowledge and understanding (Myers and Nicosia 1968, Smith and Medin 1981, Bailey 1994). In the context of e-business research Lambert (2006: 7) asserts that:

A good classification scheme organises objects according to their place within the problem domain and depicts relationships between objects.

This research uses three research perspectives found within the IS literature as a typology. Taylor and Todd (1995) identify two research perspectives; a Diffusion of Innovation (DoI) Perspective and a User-Intention (UI) Perspective. Wixom and Todd (2005) introduce a third research stream, the User-Satisfaction Perspective, based on Expectancy-Disconfirmation theory (Oliver 1996). Studies within the User-Satisfaction Perspective provide information about the overall satisfaction with an information system (Melone 1990) and tend not to explicitly evaluate specific attributes of a technology (McKinney et al 2002). Thus the User-Satisfaction Perspective does not reflect adequately a growing body of web site quality research

found within the Internet Marketing literature. Hence this thesis classifies research into web site satisfaction and web site quality using an Expectancy-Disconfirmation (ED) Perspective in recognition that both user satisfaction and web site quality research are informed by Expectancy-Disconfirmation theory.

2.3.1 Outline of Research Perspectives

This is a broad outline of the characteristics of each research perspective used in the classification scheme and a more detailed discussion takes place in Section II.

- The DoI Perspective is characterised as providing a *descriptive* account of patterns of innovation adoption using a combination of innovation attributes and external factors.
- The UI Perspective is characterised as a *predictive* approach to investigating technology adoption through modelling the influence of attitudes towards use on intentions to use.
- The ED Perspective aims to provide a means of *evaluating* single and combinations of technology attributes in terms of their contribution towards an individual forming a favourable judgement of a web site (i.e. satisfaction).

Prior research indicates that each of these approaches is a viable framework for understanding the adoption of new technologies (Melone 1990, Orlikowski and Iacono 2001).

2.4 Study Selection

Ongoing systematic searches of library databases identified a wide range of empirical research into online banking adoption. As publications were analysed further references were pursued. The three research perspectives outlined in the preceding section were used to classify published research into consumer adoption of online banking and a review was conducted in two stages. The first stage, that forms the basis of this section, comprised of a survey of published studies in order to identify trends and scope. The second stage of the analysis, that forms the basis of Section II,

involved a critical evaluation of research findings grouped according to research perspective.

It is necessary to delineate the scope of any review due to the dramatic growth in Internet research (Schibrowsky et al 2007). Thus studies were selected for review according to five criteria. First, only consumer adoption studies were included, thus institution-level adoption research was not included (see for example Daniel 1999 and Hughes 2001, 2002). Second, only Internet adoption studies were included; not included were studies that examined remote or self-service technology, such as ATMs (see for example Lockett and Littler 1997) or mobile phone banking (Luarn and Lin 2005, Laukkanen and Lauronen 2005, Laukkanen 2007). Third, not included were studies that examined online distribution for other product types. For example research has been conducted into the online distribution of pensions (Harrison and Waite 2006), stockbroking services (Srijumpa et al 2002) and investment products (Ding et al 2007).

Two further criteria were adopted so that this analysis remained consistent with procedures used in previous reviews, as outlined by Schibrowsky et al (2007). Search parameters were restricted to refereed journal articles and conference papers that contained empirical data, thus PhD theses and conceptual papers were not included. No publication date parameters were imposed. The earliest identified studies were published in 1998, the review was ongoing and was concluded in May 2008. This review process identified a total of 110 studies.

Hanson and Grimmer (2007:63) caution that when conducting a meta-review of literature there is a danger of creating a “reality of numbers” and introducing the idea that “there is an objectively specific” number of articles for which to account. They acknowledge that this is a problem inherent when creating and using a database. Thus it is not claimed that this is an exhaustive list of online banking literature or that in fact such a compilation is possible. However, it is felt that it represents an adequate sample with which to conduct analysis.

Finally the focus was on publications written in English. The sample is comprised of studies with data drawn from 28 different countries. The three most researched

national contexts are the UK (18.2%, n=20) and US (18.2%, n=20) and then Australia and New Zealand (10%, n=11). However, it is not appropriate to draw conclusions about international research activity from these results since it is likely that they reflect the focus on English language studies.

2.5 Classification

Studies were initially classified according to research perspective and year of publication. A research perspective classification was given where researchers explicitly referred to the research perspective as either guiding the data collection or within the analysis section. Some studies made no reference to any research perspective or model. In these instances papers were classified according to their stated aims using the following coding criteria:

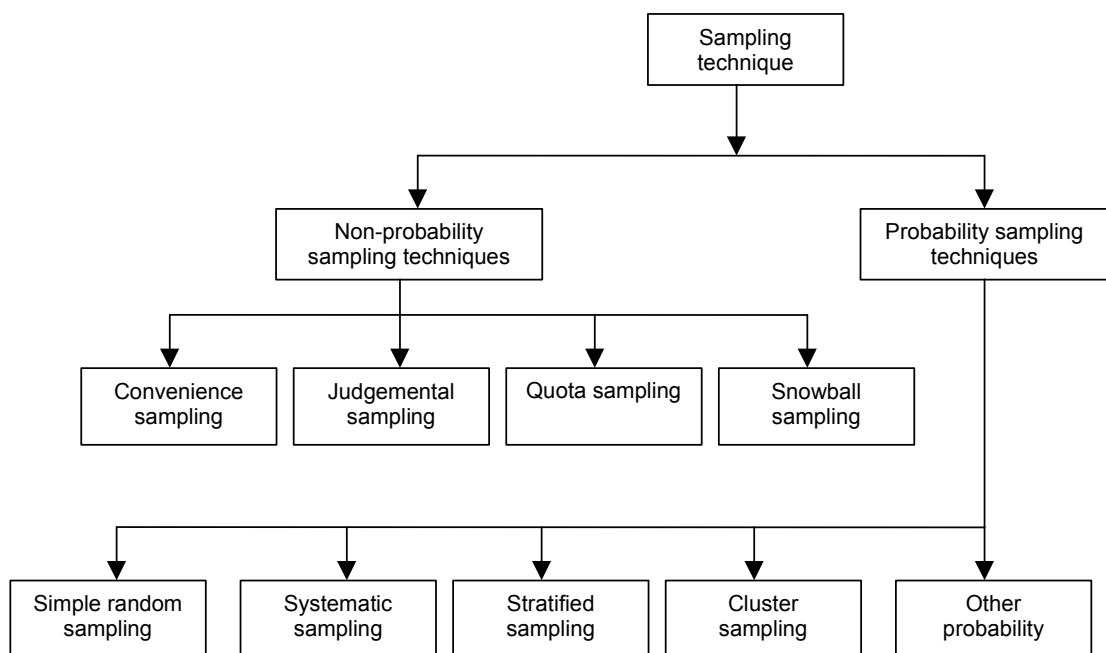
1. Diffusion of Innovation. The research aims to describe the external and internal factors that explain adoption or non-adoption of online banking. For example research might focus on identifying key attributes of online banking and the characteristics of adopters that are viewed as most important in securing adoption.
2. User-Intention. The research aims to identify how one or several attitudes towards online banking determine the intention to adopt or to continue use.
3. Expectancy-Disconfirmation. The research aims to identify the attributes of a bank web site that will result in either user satisfaction or perceptions of quality. The research study may then extend its findings to measure intention to adopt but the initial and primary focus is on attribute-level measurement.

Some online banking studies utilised models found within more than one perspective. For example, Awamleh and Fernandes (2006) draw on both DoI and UI perspectives in their study of online banking diffusion in the United Arab Emirates. However this study has been coded as being informed by the UI Perspective. Classification was determined by two considerations in instances such as this. First whether the outcome variables were “use” and “intention to use”. Second that the variables included, among others; “perceived ease of use” and “perceived

usefulness” which are widely used within the UI Perspective. Several studies (10.9%, n=12) used theories other than those identified as most closely associated with the three research perspectives. These were classified within a research perspective depending on whether they described characteristics of adopters or innovations, explained intention or measured affective response.

Sampling technique was classified according the typology outlined by Malhotra and Birks (2006) (See Figure 2.2), in order to assess the generalisability and specificity of results. The sampling frame, the method of participant recruitment, the number of participants in the achieved sample and the country where the data was gathered were also recorded. Finally the nature of the data (whether it was qualitative or quantitative), the collection instrument used and the analysis technique used to derive the main findings were noted (i.e. if a focus group was used to generate questionnaire items then this was not noted). This information was used to identify overall trends and to evaluate the research design.

Figure 2.2 Classification of Sampling Techniques



Source (Malhotra and Birks 2006: 363)

In addition the research strategy was classified as either inductive or deductive. Induction and deduction are characterised as two major techniques for theory development (Bonoma 1985, Parkhe, 1993, Perry 1998, Hamlin 2003). An inductive strategy attempts to build theory by starting “with data collection, followed by data analysis and then the development of generalisations that, with further testing, can become law-like propositions” (Blaikie 2000:100). In contrast a deductive strategy tests “a tentative theory [that] is acquired or constructed; then hypotheses are deduced and then tested by collecting appropriate data” (Blaikie 2000: 100).

Studies were also coded to gain an indication of the range, frequency of techniques that are being used. Studies that used structural equation modelling were coded “SEM”. Those studies that used exploratory factor analysis were coded “EFA” and those that used confirmatory factor analysis were coded “CFA”. Studies that compared either within group or between group means were coded “t-tests/ANOVA” while those that tested the relationships between variables were coded “chi-square/correlation” or “ANCOVA”. Studies that combined multiple variables to explain the variation in a single dependent variable were coded either “OLS regression” or “Linear Regression” depending on which approach was used by the researchers.

The code “other quantitative” includes studies that used amongst other techniques cluster analysis (i.e. Maenpaa et al 2006), probit analysis (i.e. Lee et al 2003) and multinomial logit regression (i.e. Lee et al 2005). “Qualitative analysis” includes studies that used grounded theory (i.e. Lichtenstein and Williamson 2006), critical incidence technique (i.e. Jun and Cai 2001) and thematic coding (i.e. Black et al 2001). Techniques that were used to describe sample characteristics were not coded.

2.6 Findings on Research Perspective

A comparison of studies showed that the majority (36% n=40) were conducted within the UI Perspective, followed by 33% (n=36) that used the ED Perspective and 31% (n=34) that followed the DoI Perspective (Figure 2.3). This indicates that online banking research has focused on predicting consumer intention or use of online banking. Figure 2.4 shows the development of research over time from 1998-

2008. There were no parameters set on the earliest study to be included when conducting the review. The earliest studies identified were in 1998. Data has been included up to May 2008 when the review process was concluded. The graph shows the number of studies published in each year overall and within each bar the number of studies published within each research perspective. Discounting 2008 as incomplete, an upward trend is present in terms of overall volume of research with the rate of increase slowing indicating that the field is increasing in maturity.

From 2001, ED research has grown. This trend coincides with the publication of web site quality scales within the wider Internet research literature (see for example Barnes and Vidgen 2000, 2001, Zeithaml et al 2000, 2002). Latterly there has been a shift towards DoI informed studies, this reflects the utility and appropriateness of this approach in exploring and describing the factors that shape innovation adoption and non-adoption. Indeed Maenpaa et al (2008) argue that the focus of research should now be on the perception and experiences of online banking users at different stages of familiarity with the service.

There is a growing body of research into Internet adoption, this review indicates that research into online banking is also increasing and within the IS discipline individual-level technology adoption is considered a mature research area (Venkatesh et al 2003, Venkatesh 2006). However analysis revealed that a fifth of studies in this sample (20%, n=22) did not explicitly use any research model either to generate research propositions or to contextualise findings. Analysis according to year of publication showed that just under three-quarters of these studies (72.6% n=16) were published in 2005 or later. Thus it appears that some online banking researchers are not utilising available knowledge in their enquiries. Brown et al (2003) argue that a theoretical underpinning is needed to identify the appropriate research tools, to provide insight into ways of understanding and to draw out different assumptions as to the nature of online activity. Thus the apparent lack of awareness of extant theory is a concern and highlights the need for enquiry that is informed by a comprehensive theoretical foundation.

Figure 2.3 Percentage of Studies by Research Perspective.

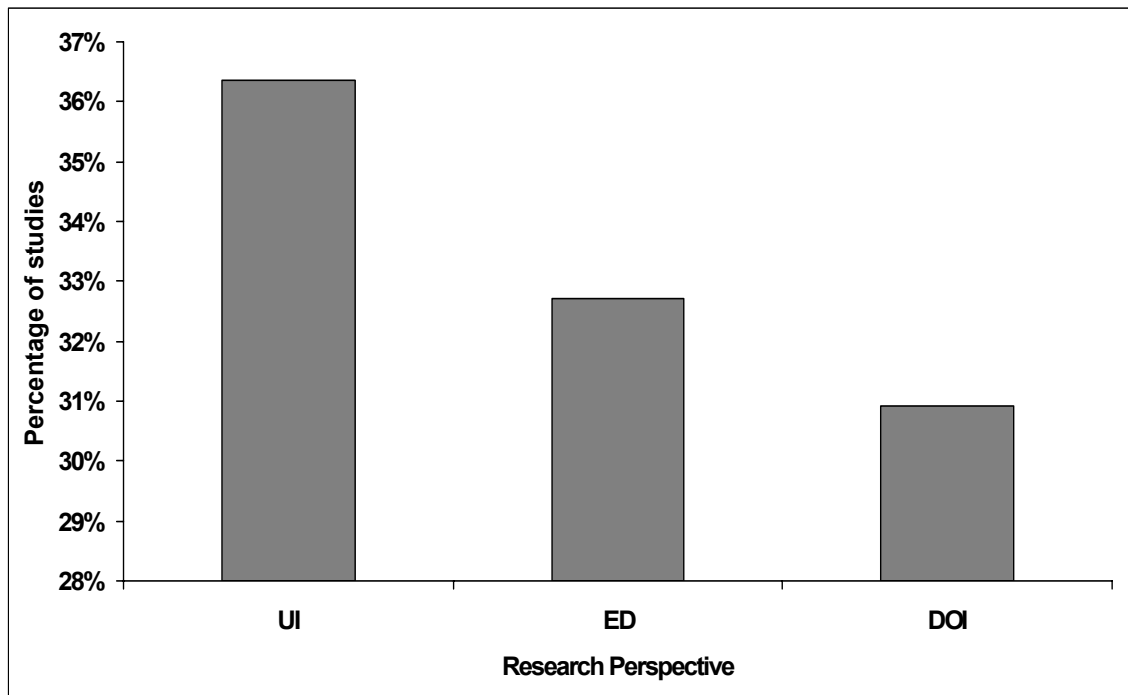
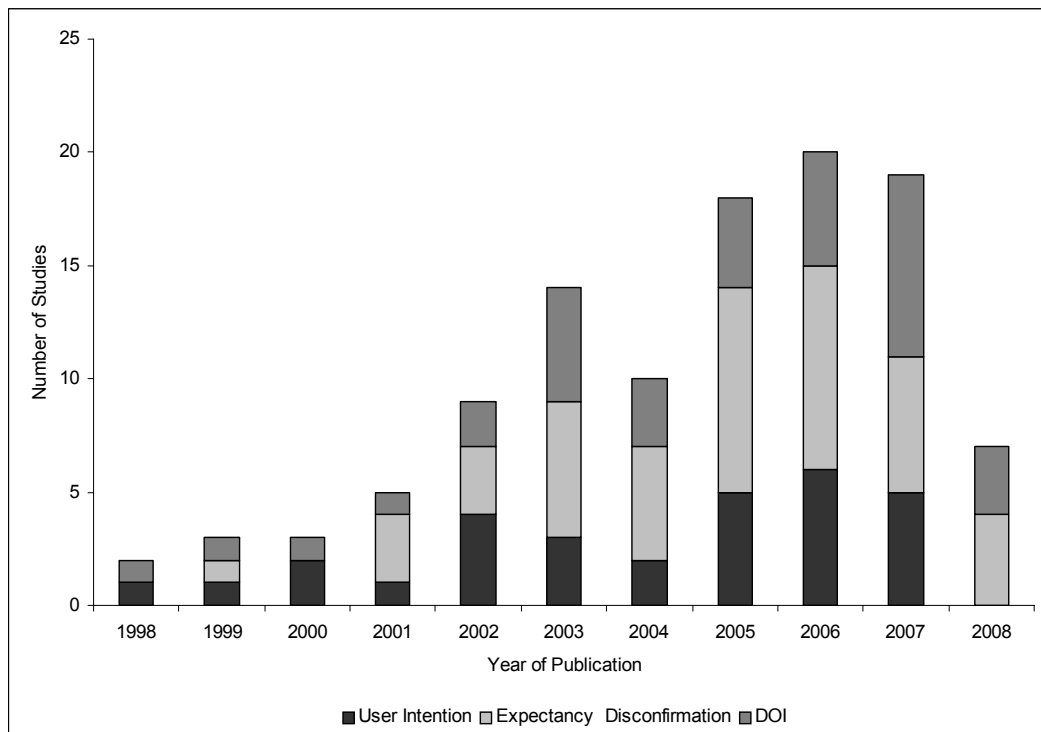


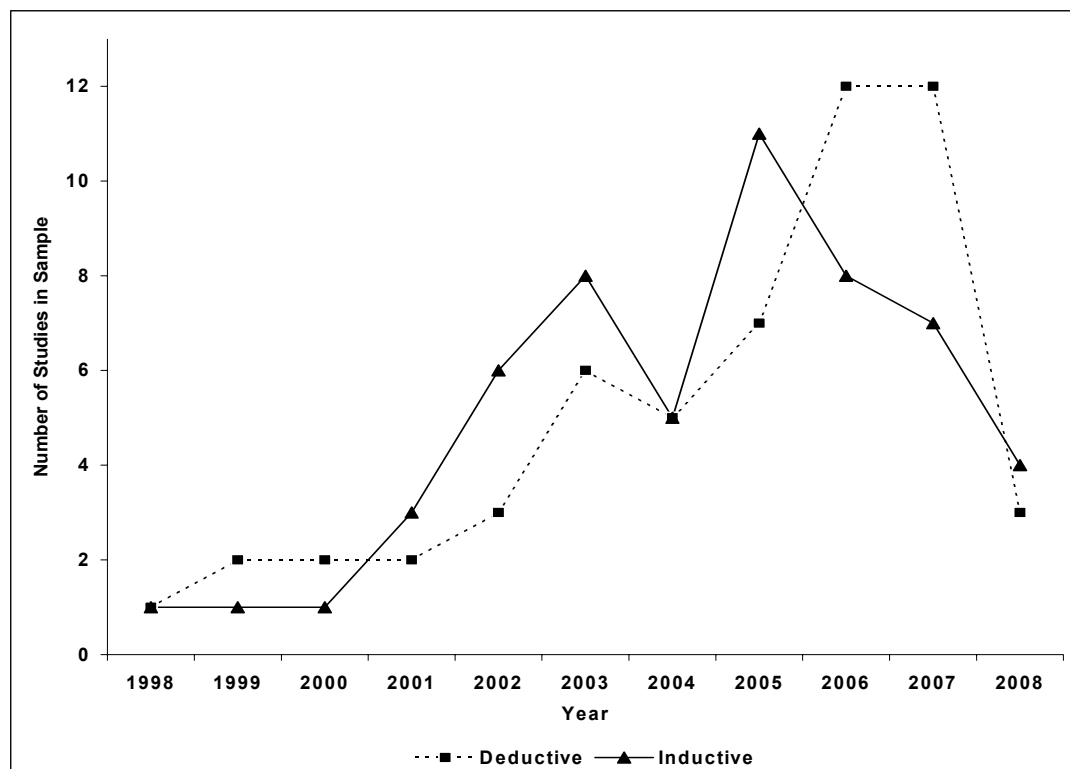
Figure 2.4 Studies Published by Research Perspective by Year



2.7 Findings on Research Design

In terms of overall research strategy, deductive (50 % n=55) and inductive research strategies (50% n=55) were equally represented within the sample of studies. Over time there no single dominant approach (Figure 2.5). Several early studies are deductive and seek to apply established models taken from IS research to a consumer context. The emphasis then switches to inductive research with a move back to deductive research in recent years. The growth in inductive research can be linked to the rise in ED studies in the period 2001-2006. For example, 34.5 % (n=19) of inductive research is underpinned by a service quality model. In these studies, researchers explore and identify the criteria that consumers are using to determine web site quality, and a common research approach is to conduct a qualitative data collection phase followed by an exploratory factor analysis.

Figure 2.5 Research Strategy by Year of Publication

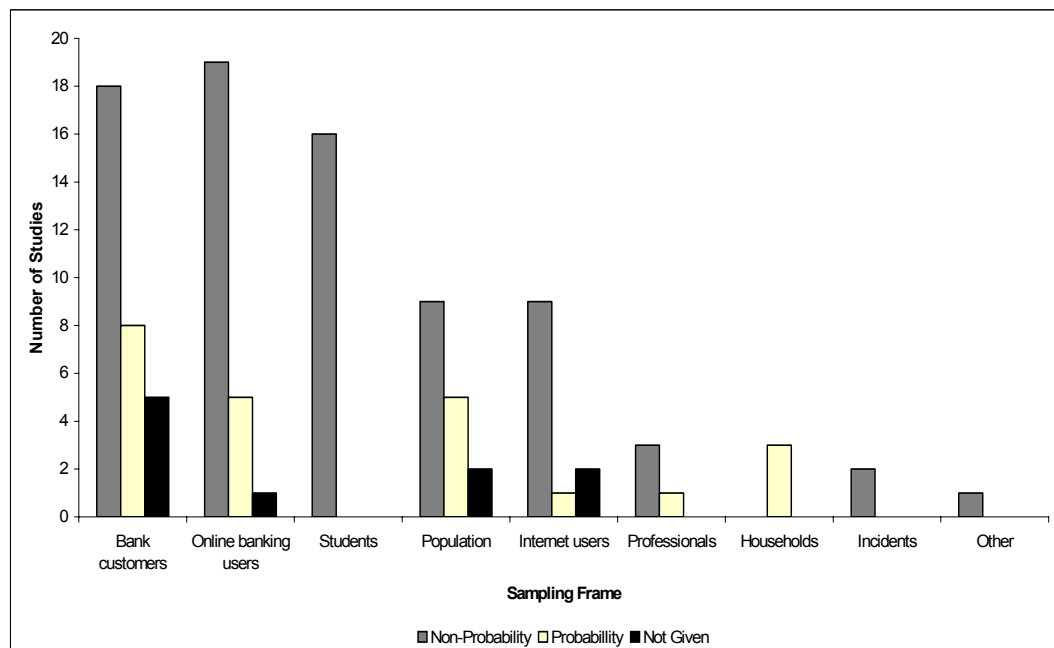


In terms of data collected the majority of studies are quantitative (90%, n=99). This finding is consistent with a review of online banking studies by Shao (2007) who finds that quantitative data is most prevalent. Surveys are used to collect 78.2% of

the data with the three most frequently used data collection methods being face-to face (26.4% n=29), postal (17.3% n=19) and online (16.4%, n=18). The mean number of participants in an achieved sample is 3,053. A standard deviation of 26,119 indicates that scores vary widely from the mean. For example, the smallest reported sample is of 4 customer interviews (Benamati and Serva 2007) and the largest is 274,000 bank customers using an institutional database (Hitt and Frei 2002). Thus examination of the modal achieved sample (n=300) and the median (n= 289) give a clearer picture of typical sample numbers.

In terms of sampling composition two of the most frequently sampled populations are bank customers (28.2% n=31) and online bankers (22.7% n=25) using either an institutional list or intercepting branch customers (Figure 2.6). The majority of studies use a non-probability sampling technique (70%, n=77), with 21% (n=23) using probability sampling and 9.1% (n=10) not stating a sampling technique. Amongst the non-probability techniques the most frequently used sampling strategy is convenience sampling (58.2% n=64). Thus despite the widespread use of quantitative techniques the generalisability of the reported results is limited due to an over-reliance on non-probability sampling.

Figure 2.6 Sampling Technique by Sampling Frame



Depending on the aims of the research the validity of the findings can be questioned. For example, it is appropriate to sample online bankers for a study that seeks to describe the attitudes and characteristics related to adoption. However if the aim of the study is to explore the relationship between certain factors and the choice to adopt or not then there will be a pro-innovation bias in surveying only current and continuing users (Bhattacharjee 2001). Thus studies that gather data only from users of online banking do not account for those who have never tried the distribution channel or for those that have tried but discontinued use.

A similar problem affects those studies that gather data from bank customers. In this instance, findings regarding the attitudes of bank customers towards online banking may be confounded by technological and attitudinal inhibitors of Internet use in general. For example, Katuri and Lam (2007) test a model that aims to account for a range of influences on actual online banking use, willingness to use and perceptions of online banking usefulness using data gathered from 159 customers intercepted in a credit union branch. Findings show that convenient Internet access is positively related to future intention to bank online. Whilst the authors conduct detailed analysis into the factors associated with possession of an online bank account they do not account for the composition of their sample in terms of Internet access overall.

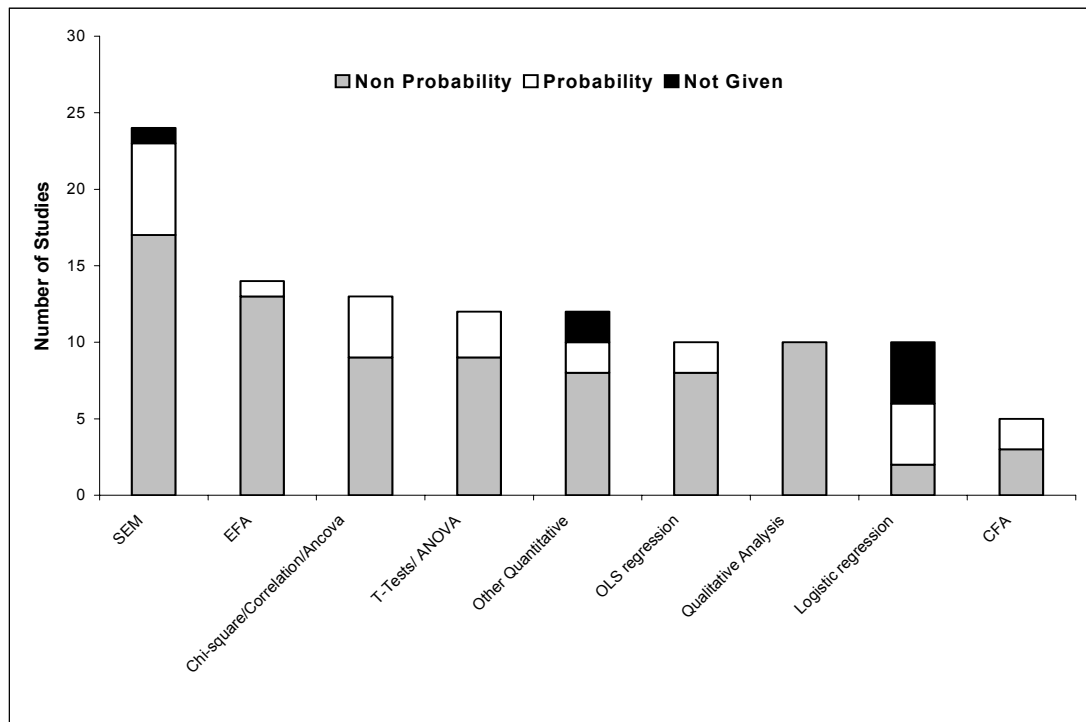
Overall it can be argued that sampling Internet users would be more relevant when investigating influences on online banking adoption. Research that draws information from individuals, who have adopted a distribution medium for a range of goods and activities, would be better placed to isolate those factors that are specifically inhibiting adoption for a particular service or good. However only a small number of studies utilise Internet users as a population of interest (10.9% n=12) and the majority of this research is based on non-probability sampling (75% n=9).

2.8 Findings on Analytical Techniques

The number of studies using a probability or non-probability sample for each technique are shown (Figure 2.7). Whilst a wide range of techniques are evident, the most frequently used analytical technique is structural equation modelling (SEM)

(21.8% n=24) and of the studies that use this technique 70.8% (n=17) apply it to non-probability samples. Several studies (20.8% n=5) employ small samples of less than 200. Tabachnick and Fidell (2007) state that as a covariance based technique SEM test statistics are susceptible to sample size. In general it is argued that a sample size of 200 is critical (Bentler 1990, Spector 1992, Hair et al 1998).

Figure 2.7 Analytical Technique



In addition, some studies test numerous modifications of a model in search of model fit and thus move to exploratory data analysis (Tabachnick and Fidell 2007). In these instances results are questionable since “a strong goodness of fit is achieved in the second stage more through skill of deletion rather than on any theoretical basis” (Chin 1998: xii). For example, Sundarraaj and Wu (2005) use a sample of 72 student participants to test a model informed by the UI Perspective using 6 items to measure three attitudes towards technology. They find that by deleting three items “the model fit accomplished exceeds commonly used recommendations” (p 440) but that the hypothesised relationships between reported use and “perceived ease of use” and “perceived usefulness” are not statistically significant. Whilst the authors

acknowledge the limitations of a student sample they do not question their analytical approach.

SEM is a strong confirmatory technique and it is questionable to what extent it is an appropriate technique to use in an emerging area of research. Chin (1998: xii) argues that typically in a field of study “where theoretical models and measures are often simultaneously developed, use of covariance-based SEM analysis is likely [to be] premature.” Stebbins (2001) criticises social scientists for tending towards confirmatory processes too soon in new fields of enquiry. He advises that investigators should remain flexible and open-minded and that several iterations or “concatenations” of exploration are needed to develop knowledge before moving to deductive enquiry. Thus there remains a need for exploratory research to investigate online banking purposively and systematically.

2.9 Section Summary

Section I identified trends in online banking research to provide direction for the development of the thesis. Findings show that the volume of sector-specific research has increased over time indicating that this is an active research area that is of interest and relevance to both academic and practitioner audiences. Thus it is appropriate to develop a thesis to contribute to this area of enquiry.

In terms of research perspective most studies are located within the UI Perspective and thus seek to predict consumer adoption. However there is a shift towards the DoI Perspective, which describes the pattern of innovation and adopter characteristics. Overall no single research perspective has established continuing dominance within the field. Thus further investigation is needed of the substance of the findings within each research perspective. This need will be addressed in Section II.

Quantitative data collection and analytical techniques dominate this field of enquiry as they have done within the marketing discipline as a whole (Hanson and Grimmer 2007). Quantitative approaches offer a common template upon which to develop a foundation for subsequent research (Brady et al 2004), compared to the wide range

of qualitative approaches available (Hanson and Grimmer 2007). In terms of research design, inductive and deductive enquiry are equally present. There is a trend towards inductive enquiry suggesting recognition that the Internet requires exploratory research in order to generate new ideas and develop a richer understanding. However, a large proportion of studies focus on SEM and other confirmatory techniques and it is argued that this emphasis on theory testing rather than development is in danger of limiting understanding. For example, Loiacono et al (2007: 51) caution that:

Too rapid a convergence on a particular set or framework of constructs runs the risk of excluding important characteristics of the phenomena.

Therefore, contingent on the findings of Section II, this thesis will consider the appropriateness of developing an exploratory study into online banking.

Finally scrutiny of sample sufficiency indicates over-reliance upon non-probability, convenience sampling bringing into question the generality and validity of findings. Many samples are drawn from populations of bank customers without regard to whether they are confirmed non-adopters of the Internet and thus findings may be confounded by factors associated with rejection of that particular technology. Chapter 1 presented evidence from secondary research of an association between online banking and Internet adoption. Thus it is argued that there is a need for research based upon a systematic sampling of Internet users.

Section II Research Perspectives

2.10 Section Introduction

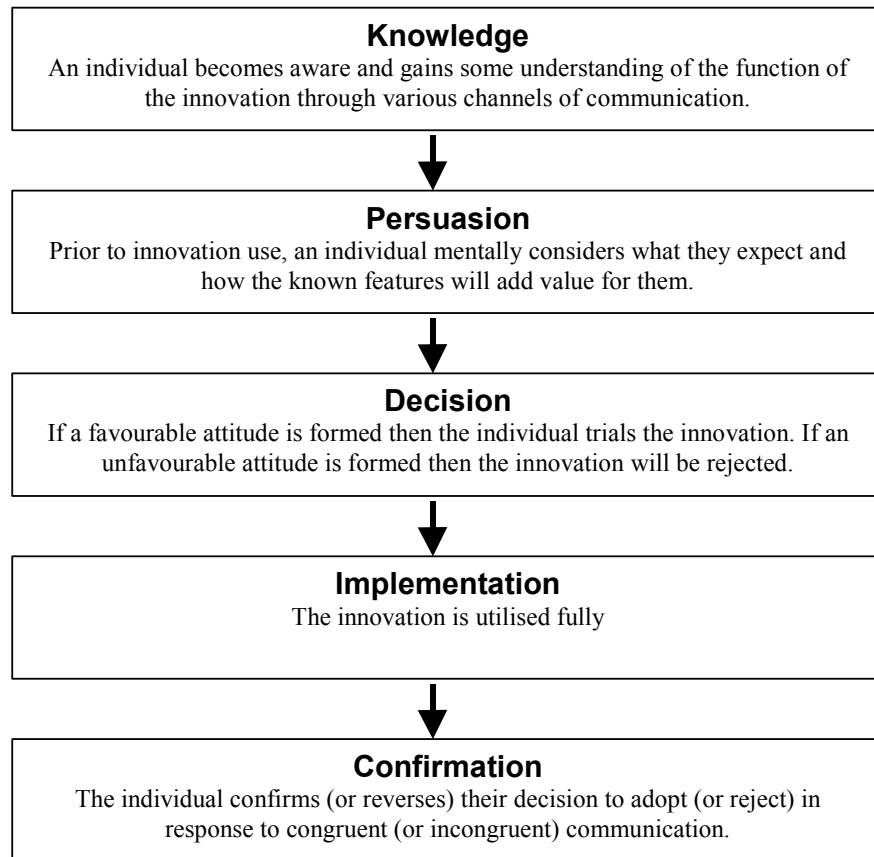
This section focuses on critically evaluating the substance of online banking studies. Each of the research perspectives is examined in turn and thus the section is divided into three sub-sections. Each subsection begins with an overview of the research perspective, then outlines its application to Internet research before critically reviewing a range of online banking studies. The section concludes with a summary and discussion of the key findings.

2.11 Diffusion of Innovation Perspective

With regards to technology acceptance, Rogers' (1995) Diffusion of Innovation theory (DoI) has been widely used at both an individual and organisational level (Gatignon and Robertson 1985, Sultan et al 1990, Prescott and Conger 1995). DoI theory aims to identify processes and characteristics (both of the adopter and of the innovation) that promote adoption and increase the rate of diffusion over time (Rogers 1995). There is an assumption that to succeed an innovation must be superior to any alternative. Superiority is demonstrated by high compatibility with the adopter's circumstances and low complexity in understanding and use.

Rogers (1995) argues that the inclusion of time is the distinguishing characteristic and strength of DoI theory. Thus adoption is conceptualised as a five-stage process (Figure 2.8). Each adoption stage involves "information-seeking and information-processing activity in which the individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation" (Rogers 1995: 165). Finally, Rogers (1995) notes diffusion is also influenced by whether the adoption decision is voluntary or non-voluntary and whether it is a collective or individual decision. In general, Rogers (1995) proposes that a non-voluntary collective adoption decision will be more rapid than one that is individual and voluntary.

Figure 2.8 Adoption Decision Process



Source: Adapted from Rogers (1995).

Table 2.1 Attributes of a Successful Innovation

Innovation Attribute	Definition
Relative Advantage	The degree to which the innovation is perceived as being better than the idea it supersedes.
Compatibility:	The degree to which the innovation is perceived as consistent with existing values, past experience and the needs of potential adopters.
Complexity:	The degree to which an innovation is perceived as relatively difficult to understand and use.
Trialability:	The degree to which an innovation may be experimented with on a limited basis.
Observability:	The degree to which the results of an innovation are visible to others.

Adapted from Rogers (1995 pp 212-244)

2.11.1 Innovation Characteristics

Rogers (1995) identifies five innovation attributes that facilitate adoption (Table 2.1). In terms of innovation characteristics, there is considerable evidence within IS

research that “Relative Advantage” is the best predictor of adoption and continued use (Agarwal and Prasad 1997, Karahanna et al 1999, Moore and Benbasat 1991, Plouffe et al 2001). However there is evidence that “Relative Advantage” and “Compatibility” may not be distinct and this may inflate the importance of “Relative Advantage” within the DoI framework. For example, Moore and Benbasat (1991) find that scale items for these constructs load onto one factor and are correlated at .99. They conclude that this may indicate either that individuals may not perceive “Compatibility” and “Relative Advantage” as being distinct factors when adopting an innovation or that there is a causal relationship that is not accounted for within the DoI framework i.e. “Compatibility” is an antecedent to “Relative Advantage”.

Uncertainty and risk are also considered important influences at the early stages of the adoption process. Rogers notes that prior to use there will be uncertainty over the degree of “Relative Advantage”, “Compatibility” and “Complexity”, and thus any decision to adopt an innovation involves a degree of risk. He proposes that innovation “Trialability” and “Observability” reduce uncertainty and risk perceptions. Trial can take place on a limited basis through the use of what are termed “divisible elements” and “innovations that can be divided for trial are generally adopted more rapidly” (Rogers 1995:171). In addition, the ability to observe others gaining advantage from an innovation is considered a vicarious trial and thus facilitates rapid diffusion. Given its importance, perceived risk is used as an additional attribute in consumer-based studies as a significant determinant of adoption (Bauer 1960, Ostlund 1974).

2.11.1.1 Perceived Risk

Stone and Gronhaug (1993:40) make a “critical distinction” between the study of risk perceptions within the marketing discipline and other academic fields. They note that in terms of consumer behaviour the research focus is on negative outcomes, whilst other disciplines examine the probabilities of both positive and negative outcomes. Thus, in terms of consumption activity, perceived risk has been defined as an evaluation of the consequences of taking an unfavourable action weighted by

the probability of these consequences occurring (Cox 1967, Dowling and Staelin 1994, Dowling 1986, Mitchell 1999).

Mitra et al (1999) outline how marketing researchers have identified several dimensions of risk that are salient to consumers (i.e. Roselius 1971, Jacoby and Kaplan 1972, Peter and Tarpey 1975). These dimensions and their definitions have been aggregated by Pires et al (2004) (Table 2.2). It should be noted that “Convenience risk” is also referred to as “Temporal” or “Time Risk” in the consumer behaviour literature (Peter and Tarpey 1975). Furthermore, “Psychological Risk” has also been expanded to include any type of psychological discomfort or negative cognitive response related to the uncertainty of the consumption situation (Bauer 1960, Stone and Gronhaug 1993). Within the risk literature it has been shown that risk perceptions can be placed within one of these categories however classification is subject to context and researcher judgement (Stone and Gronhaug 1993, Mitchell 1999, Littler and Melanthiou 2006).

Table 2.2 Defining the Components of Perceived Risk

Risk Component	Operating Definition
Financial Risk	The likelihood of suffering a financial loss due to hidden costs, maintenance costs of lack of warranty in the case of faults.
Performance Risk	The chances of the item failing to meet the performance requirements originally intended of the purchase
Physical Risk	The probability of the purchase resulting in physical harm or injury
Psychological Risk	The chances of the specific purchase being inconsistent with the personal or self-image of the consumer.
Social Risk	The likelihood of the purchase resulting in others thinking of the consumer less favourably
Convenience Risk	The probability of the purchase resulting in lost time in terms of delivery, fitting/customisation, or in repair/down-time.
Overall Risk	The likelihood that purchase of the item will result in general dissatisfaction of the consumer.

Source: Pires et al (2004).

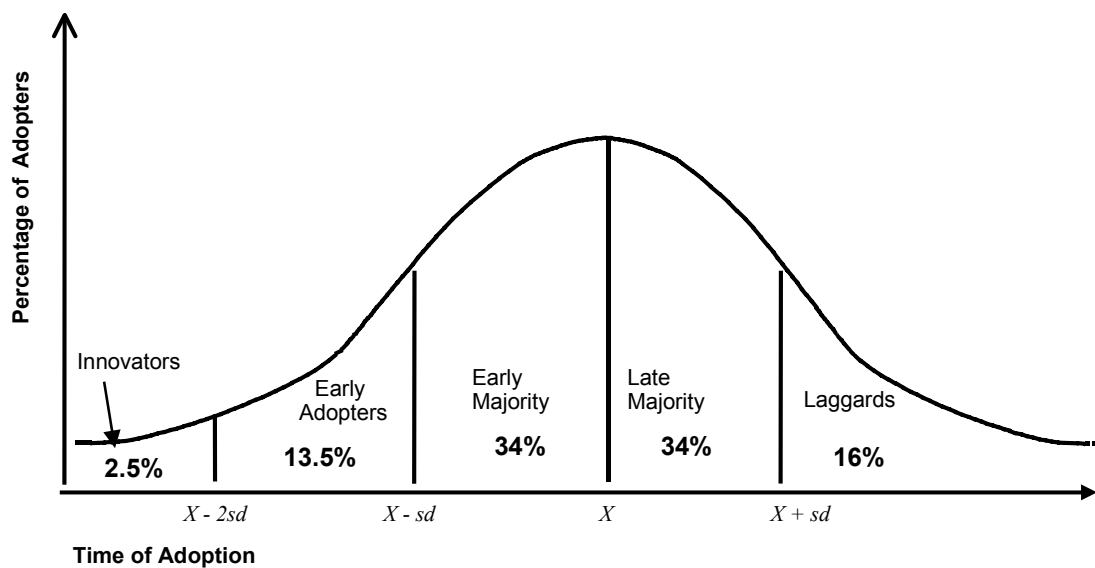
Rogers (1995) argues that it is the uncertainty surrounding a new innovation that results in perceptions of risk thus implying the existence of two distinct but related constructs. Knight (1948) posits that “uncertainty” is the result of a lack of

knowledge whilst “risk” is an informed evaluation of probable outcomes and their desirability. Peter and Ryan (1976) argue that the concepts are distinct on the basis that reducing uncertainty in terms of increasing knowledge does not necessarily result in a reduction of risk. For example, the more knowledgeable a consumer becomes about a product or service the more they understand the risks to which they are exposed. Mitchell (1999: 166) also presents the argument that risk and uncertainty “must be understood to be distinct from one another” whilst noting that “invariably marketers have allowed the two concepts to be used synonymously”. Thus it is important when examining adoption behaviour not only to gather information on perceived risk but also on the degree of uncertainty that surrounds an innovation.

2.11.2 Adopter Characteristics

Rogers (1995) proposes that individuals can be classified into five discrete adopter categories based on the time at which they choose to use an innovation. The frequency of innovation adoption is plotted over time (Figure 2.9) and usually describes a normal curve (Rogers 1995). Utilising this method of classification Rogers (1995) proceeds to describe the dominant characteristics of each adopter grouping in terms of socio-economic status, personality characteristics (such as attitude towards risk) and response to peer pressure and social influence.

Figure 2.9 Adopter Categorisation



Source: Rogers (1995: 262).

In general, those who are early adopters of an innovation are less sensitive to risk, have greater wealth, and higher intelligence. Innovators and laggards tend to be viewed as exhibiting deviant social behaviour compared to the majority. Thus individuals who are the first and last to adopt an innovation may be less sensitive to peer pressure and have less social influence due to lower credibility.

Rogers (1995) proposes that this segmentation schema enables the formulation of communication messages and facilitates the choice of appropriate communications channels in order to increase the rate of diffusion. For example, the “late majority” are considered sensitive to risk and more subject to peer pressure thus messages that give security guarantees delivered by peers would be most effective (Brassington and Pettitt 2007). However, whilst this approach is appealing in its ease of application, it has also been criticised as being too simplistic (Mahajan et al 1990, Mahajan and Muller 1998) and rooted within rational theory with over-reliance on sequential stages (Lyytinen and Damsgaard 2001). Thus a more considered approach is needed to capture the subtleties of innovation diffusion.

2.11.3 Summary

The DoI Perspective provides a post-hoc explanation of the factors that contribute towards innovation success (Greenhalgh et al 2004). It does this by identifying innovation and innovator characteristics that are associated with the diffusion of an innovation. The strengths of DoI are its multi-disciplinary nature, its pragmatism and the simplicity of its approach (Rogers 1995). However problems have been identified in operationalising this framework in a research setting (Moore and Benbasat 1991). In addition there is criticism of DoI on the grounds that it is not a dynamic model but a collection of several different elements and there is inadequate attention to how innovation characteristics may combine (Lyytinen and Damsgaard 2001). This review will now provide an overview of the insight gained from applying this framework to consumer Internet adoption before critically evaluating this approach in the context of online banking.

2.12 Application of DoI to Internet Adoption

The purpose of this section is to provide a broad understanding of factors that influence Internet adoption in accordance with the DoI framework. It first examines and discusses findings on the characteristics of the Internet that are linked to its diffusion, in particular it discusses how perceptions of risk influence adoption. It then provides background on adopter and non-adopter characteristics.

2.12.1 Internet Characteristics

There are several distinct Internet characteristics that might result in perceptions that it is superior to other channels. The Internet's ability to support search activity results in increased information "with regards to product attributes, comparative pricing, availability, and overall value proposition" that informs decision making (Brown et al 2003:2). For example, in terms of information search Ainscough and Luckett (1996) outline the relative advantage of the Internet as follows:

- **Accessibility** - Tools such as search engines simplify and reduce the time and effort related to search activity. These are computerised decision aids that the consumer can set to select options based on individual preferences thus saving time and energy and encouraging extended search (Van Raaij 1998, Russo and Leclerc 1991).
- **Availability** - Being without physical form or "virtual" the Internet can be easily and quickly accessed from any location, 24 hours a day, seven days a week.
- **Interactivity** - The Internet supports two-way communication. The consumer can tailor their Internet experience to meet individual needs. The interactivity of the media means that consumers can know very quickly the availability, the variety and the price of specific goods and services.
- **Dynamism** - The Internet contains limitless information that can be updated and amended simply and quickly maintaining its relevance to the user.
- **Multimedia Friendliness** - The Internet can provide pictures, text, sound and video, making information attractive, as well as useful, to the user.

These distinct qualities of “greater convenience and accessibility, reduced waiting time and faster response” (Walker and Johnson 2006:127) also mean that the Internet may be perceived as a superior channel for the purchase of goods and services. Indeed, online shops have been shown not only to offer lower prices, increased choice, and better information and but also convenience in selection, purchase and delivery, including 24-hour availability and freedom from geographical constraint (Jarvenpaa and Todd 1996, Timmers 1999). Choudhry and Karahana (2008:183) summarise a selection of prior studies and conclude that “efficiency or convenience” has exerted a consistent influence on acceptance of electronic commerce. They argue that:

Although not explicitly labeled as such, one can argue that these are dimensions of RA [relative advantage] because they represent ways in which electronic channels can offer advantages over traditional channels. (p 183).

2.12.2 Perceptions of Risk and Internet Adoption

One of the strongest and most consistent influences on Internet adoption is risk. For example Strader and Shaw (1997) describe how consumers refrain from using the Internet if they feel that the level of risk is unacceptable. In accordance with Rogers’ proposition that early adopters will be less sensitive to risk, early studies have shown that those individuals who do shop online are less risk-averse than those who do not (Donthu and Garcia 1999).

There is a growing body of literature that investigates the adverse effects of risk on online purchase intention and several researchers have adapted earlier definitions of the dimensions of consumer risk perceptions to align them to Internet use. For example, security concerns have been isolated as adversely influencing a consumer’s willingness to purchase online (Miyazaki and Fernandez 2001, Belanger et al 2002, Suh and Han 2003). Primarily these concerns reflect the consequences of information being stolen or corrupted (Suh and Han 2003). Thus negative outcomes associated with using the Internet include invasion of privacy and financial loss as a result of credit-card fraud.

Brown et al (2007) in a comparison between Internet shopping and other forms of home-shopping identify that perceptions of risk are similar but that privacy and personal risks are amplified and are considered as particular to Internet transactions. They write that:

Personal risk lies in the fear of giving one's credit card number online and privacy risk corresponds to the shopper's fear that personal information will be collected without the shopper's knowing. These initial results suggest the appearance of new forms of risk associated with the Internet. (p 81).

In an empirical study, Miyazaki and Fernandez (2001) find that the most frequently perceived risks associated with e-commerce are lack of security and loss of privacy. There is a lack of clarity over how "Privacy risk" maps onto prior conceptualisations of the components of risk. For example, Forsythe and Shi (2003) assign it as an aspect of "Psychological Risk" whilst Hassan et al (2006) identify it as an additional dimension. In the context of online transactions, "Privacy risk" may also be considered to be an aspect of "Physical risk" since the individual may envisage physical harm, with regards to loss of possessions and funds as a result of theft or fraud (Montoya-Weiss et al 2003).

The Internet, in common with other forms of remote purchase, increases the intangibility of products. Thus consumers are unable to touch the products resulting in an inability to fully assess a good before purchase (Kau et al 2003). This has led some authors to conclude that the Internet has lessened the distinctions commonly made between goods and services in terms of pre-purchase risk (Peterson et al 1997, Pereira 1998, Kim and Lennon 2000, Featherman et al 2006).

There is contradictory evidence regarding the comparative degree of risk associated with online services and goods. For example, Montoya-Weiss et al (2003) find that perceptions of online risk are related to the nature of the goods being purchased with perceptions of security risk being highest for financial services. However, Pires et al (2004) find that online service transactions are not perceived as riskier than goods, although they do identify that financial risk is greatest for online purchase of goods, whilst psychological risk is highest for services. Thus there is a clear need for

research that explores risk for specific purchase contexts. Brown et al (2007: 81) state that:

Further research is needed to better understand the different potential sources of risk involved in making a purchase online and to clarify the different dimensions that result from it.

Furthermore, it is important to determine which elements of an online transaction contribute towards perceived risk. In a qualitative study Cases (2002) finds that consumers perceive Internet shopping risk as comprising of several interconnected but distinct sources: risk associated with the product, risk associated with the Internet in general and specific to the web site, and risk from conducting a remote transaction. Thus in terms of the online experience there is a distinct level of risk associated with the technology, the transaction taking place and the product class that requires an investigator to take a finely detailed approach.

In an attempt to mitigate perceptions of risk Internet researchers have focused on how to gain consumer trust (i.e. Jarvenpaa et al 2000, Bart et al 2005). Within the wider literature trust is defined as a decision “to accept vulnerability based on positive expectations of the intentions or behaviours of another” (Rousseau et al 1998: 395). Yoon (2002:50) identifies that online trust is developed over time as a result of positive experience and that it is a facilitator for formulating positive purchase intention. The primary focus of research has been on web site functionality (Cyr 2008). In terms of innovation characteristics it has been proposed that the design of a web site can contribute to reducing risk perceptions and can help in building trust (Fogg et al 2001). For example, security concerns may be addressed through the provision of technological security protection such as encryption, authentication and legal recognition. In summary, Bart et al (2005:134) argue that online trust is a dynamic process that draws on several factors:

Thus, online trust includes consumer perceptions of how the site would deliver on expectations, how believable the site’s information is, and how much confidence the site commands. Many antecedents may drive these perceptions.

2.12.3 Role of Online Information Search

Rogers (1995) highlights the role of information-seeking as an activity by which an individual can reduce uncertainty about the advantages and disadvantages of an innovation. In terms of Internet adoption information search has been shown to precede full adoption in several studies (Ramaswami et al 2000, Hodgkinson et al 2000, Fogg et al 2001, Shim et al 2001, Webster and Ahuja 2006).

Online information search operates at two levels first as a low-risk divisible activity by which to assess web site functionality (Webster and Ahuja 2006) and second as a convenient and efficient method by which to obtain product information and thus experience the benefits of the medium (Shim et al 2001, Wolfinbarger and Gilly 2001). For example, Ramaswami et al (2000) find that consumers who use the Internet for information search have a greater tendency to use it for transactions and argue that obtaining information is a low-risk way to gain experience of the Internet. In addition it has been suggested that the credibility of the information provided on a web site is important in establishing trust in the provider of a product or a service and thus is used as an attribute in assessing risk (Fogg et al 2001).

It is suggested that online information search is a necessary stage before a consumer purchases online and that satisfactory information acquisition using the Internet will result in online purchase (Evans and Wurster 1999, Shim et al, 2001). However it may be that not all online information seekers will proceed to become online purchasers. For example, Lassar et al (2005:178) note that “there is a distinction between consumers who use the Internet to browse and gather information and those who use it to actually make purchases”. Thus some consumers may be simply unable to accept the risks that they associate with online purchase.

The preceding paragraphs are not meant to suggest that information search is a risk-free activity. In terms of online search activity there are several potentially negative outcomes. In terms of “Physical Risk” online information search may result in increased mental effort and ultimately confusion (Nachmias and Gilad 2002). For example, Hoffman and Novak (1996b) have noted that the Internet frees consumers from their traditionally passive role as receivers of marketing communications and

requires them to exercise greater control over the information search and acquisition process.

Furthermore consumers may anticipate “Performance risk” if they fail to select an appropriate information source. Dholaki and Bagozzi (1991) outline how consumers have to choose to visit a particular site, to follow links through multiple levels within it, to continue navigating a web site or to switch to another site and finally make the decision to return to the web site on future occasions. There is also potential “Convenience risk”. Klein and Ford (2003) note that the benefits of search will vary according to the online source selected and that consumers must choose the amount of time to spend with each source in order to maximise the benefit.

In terms of web site functionality there are several attributes that may increase risk perceptions. For example, a web site may be slow to download, information may be difficult to locate, graphics may be insufficient and information may not be relevant or may be dated (Venkatesh and Davis 1996, Abels et al 1997, Eighmey and McCord 1998, McKinney et al 2002). Web site providers may also introduce “Privacy risk” through requiring a consumer to register an interest and supply personal details before being able to view information (Peppars et al 1999).

In addition web site users may be required to actively input information into the system (for example about choice preference) before receiving more detailed information in return. Thus “Performance” in the case of web site failure and “Security risk” in the case of third party interception might also be perceived (Xu and Koronios 2004).

However whilst statistics show that consumer search behaviour is a ubiquitous activity on the world wide web (Brown et al 2007), it has received relatively little researcher attention (Kulviwat et al 2004). Thus there is a need to develop a deeper understanding of the relationship between perceptions of online risk and online search behaviour and in particular a more detailed insight into the role of web site functionality.

2.12.4 Characteristics of Internet Adopters

Early studies into the characteristics of online adopters find that they tended to be male, well educated, well-paid and younger (Katz and Aspden 1997, Hammond et al 2000, Teo 2001, Wyatt et al 2002). This is consistent with Dickerson and Gentry (1983) who identify these characteristics among purchasers of home computers. They argue that a higher income reduces financial risk, a higher level of education facilitates understanding and a higher status occupation may provide work-related experience and hence trial of the information technology before personal adoption.

In terms of the Internet, Wasserman and Richmond-Abbott (2005:1) reason that the socio-demographic characteristics of adopters are largely as one should expect since:

The use of this new technology in an effective manner required a home computer, and/or access to a computer at work, or in a public setting...funds.. to purchase monthly access.. and knowledge of the computer in relation to web use.

However, over time the cost of technology has fallen and the individual characteristics and influences most strongly associated with adoption have changed accordingly (Cummings and Krout 2002). For example, gender imbalances are declining partly due to women's increased use of information technology in the workplace and within education (Morahan-Martin 1998, Ono and Zavodny 2003). However there is evidence that gender imbalances exist according to purpose of Internet use. For example, Brown et al (2003) find that female consumers perceive online shopping as more risky than men.

Researchers have also focused on identification of characteristics that define a non-adopter. Unequal access to the benefits of the Internet has been viewed as contributing to social inequality, since information technology plays an increasingly important role in education, employment and social interaction (Hoffman et al 2001, Wyatt et al 2002). In particular there has been considerable attention paid to detecting the socio-economic factors that account for non-adoption in order to propose solutions to prevent a "digital divide" (National Telecommunications and Information Administration 1999, Compaine 2001).

However there is increasing evidence that there are individuals, who whilst they have adequate economic and cognitive resources, simply do not choose to go online (Dutton and Helsper 2007). For example, consumer studies show that online shopping adoption is influenced by a general acceptance of the Internet as a medium (Hansen et al 2004, Soopramanien and Robertson 2007). Wyatt et al (2002: 25) argue that:

This challenges the conventional industrial and political wisdom that everyone is a potential user and thus casts doubt on the widespread view that the main policy challenge is to remove barriers to access.

Thus it has emerged that attitudes and beliefs towards Internet use are increasingly important in characterising adopters and non-adopters.

In accounting for the characteristics associated with each adopter category Rogers (1995: 265) describes late adopters as sceptical and laggards as suspicious. Research into Internet use indicates that these attitudes increasingly are characteristics of those yet to adopt the Internet. For example, Chapter 1 reported that in the UK the main reason given for non-adoption was a belief that there were no perceived benefits from adoption (Summerfield and Babb 2004).

In a study that controlled for the influence of age on Internet adoption, Tatnall and Lepa (2003) explored the characteristics of older people in Australia who were not using the Internet. They note that “whilst some older people find the idea of the Internet threatening, others see it as a means of maintaining their independence” (p 61). Several studies show that rather than socio-demographic variables it is an individual’s belief that there will be a benefit in use coupled with either risk tolerance or no perception of risk that is becoming a defining characteristic of adoption (Kolodinsky et al 2000, Bart et al 2005, Lichtenstein and Williamson 2006). Thus an investigation into Internet adoption amongst individuals should consider accounting for beliefs regarding the utility of the medium and risk perceptions as well as socio-demographic characteristics.

2.12.5 Summary

This discussion on the application of DoI within Internet research has presented a broad background to the factors that are influencing Internet adoption. It has shown that the Internet has several characteristics from which consumers can derive relative advantage both in terms of information search and transaction activity. In addition both online information seeking and online transaction activity have been associated with a variety of risks. The role of information search as a low-risk divisible activity has also been outlined. Previous research has identified that perceptions of unacceptable risk can prevent consumers from using the Internet. Risk perceptions may relate to several interconnected but distinct sources including the product, the channel, the web site and the nature of the transaction.

In terms of adopter characteristics extant research shows that, at the early stages of Internet diffusion, adopters were identified in terms of their socio-demographic characteristics. However as time has elapsed, the socio-demographic divide between adopters and non-adopters has lessened. Research is beginning to show that attitudes towards and beliefs about the Internet are stronger influences on adoption (O’Cass and Fenech 2003) and that there are distinct groups of individuals who are pre-disposed towards non-adoption regardless of the level of resources to which they have access.

2.13 Application of the DoI Perspective to Online Banking

This review now provides a critical evaluation of the contribution of DoI informed research in the context of online banking. The aim of this section is to show where research has generated an understanding of online banking diffusion and to pinpoint specific gaps in current knowledge.

2.13.1 Innovation Characteristics: Online Banking

There are various studies that identify the characteristics of online banking that are driving diffusion. For example, Tan and Teo (2000) find that relative advantage, compatibility and trialability all increase the likelihood of online banking being adopted. In a more detailed consideration of online banking characteristics Howcroft

et al (2002) find that lower fees, improved service quality, increased convenience and 24 hour accessibility are all important factors in encouraging adoption of online banking. Lee et al (2005) find that adopters of online banking perceive benefits from convenience and quick service. Durkin et al (2008) find that convenience and improved service influence online purchase of financial products. Thus it appears that online banking offers a range of beneficial outcomes for adopters.

However, there are indications that consumers do not perceive online banking as being sufficiently superior to other distribution channels and that this is impeding mass diffusion (Devlin and Yeung 2003, Sarel and Marmorstein 2003). For example, Sathye (1999) proposes that limited perception of relative advantage is a barrier to online banking adoption. Black et al (2001) find that consumers did not identify any advantages to online banking compared to telephone banking. Lichtenstein and Williamson (2006) find that non-adopters perceive that online banking is not convenient compared to other channels. Akinci et al (2004) find that non-users of online banking are not aware of all the benefits of online banking. Thus in order to understand reasons for non-adoption it is important, in terms of Rogers (1995) framework, to examine where and why online banking is failing to deliver.

One explanation for limited perceptions of relative advantage might be the time at which data was gathered. In early studies insufficient time may have elapsed meaning that prospective users would not have experienced or observed any benefits. For example, Saythe (1999) finds that just over half of his respondents (55%, n=38) were unclear on the benefits that online banking could offer. Tan and Teo (2000: 26) acknowledge that their study might have been affected by lack of awareness and “hands-on” trial of online banking amongst participants. Sarel and Marmorstein (2003) find significant differences in attitudes and behaviours between early users and those that the banks hope to adopt next in terms of awareness of the availability of online banking and conviction over the benefits from use. Thus there is a need for additional research now that penetration has increased (Littler and Melanthiou 2006).

An individual becomes convinced of the relative advantage of an innovation through watching others gain benefit from its use. Thus Rogers (1995) argues that the more

observable an innovation is in terms of its use and benefits the more likely it is to be adopted. However, observability has been shown to be problematical when applied to IT adoption, for example compared to hardware use (i.e. a PC) software use is less visible (Moore and Benbasat 1991, Rogers 1995). When applying Rogers (1995) framework to the adoption of telephone banking Lockett and Littler (1997) do not include observability on the grounds that direct banking services are not used in public view. In terms of online banking, Black et al (2001) and Hernandez and Mazzon (2007) both find that observability is not a determinant of intention to adopt and in fact observability exerts a negative influence. Given the sensitive and personal nature of a banking transaction, one explanation for these findings is that the more observable online banking is perceived to be the more privacy is invaded leading to increased perceptions of security risk (Cockrill 2004). Thus there is a need to examine alternative methods of communicating the advantages of online banking to prospective adopters. For example Durkin et al (2008) argue that banks should gain a deeper understanding of customer preferences in order that they may communicate the benefits of use directly through conventional marketing communications.

Individuals can also become convinced of the relative advantage of an innovation through trial before adoption. It has already been shown that in terms of Internet adoption information search is an important first stage before full adoption however there has been limited attention to the impact of information search on online banking adoption (Winklhofer et al 2003). For example, Black et al (2001) find that consumers perceive online banking as providing a better financial overview compared to alternative channels but it is not considered supportive when asking questions. However Black et al (2001) do not develop this finding when examining trialability although overall they report that “trialability is crucial” (p395).

Littler and Melanthiou (2006) do consider the role of information search as a means of reducing risk. However they focus on the gathering of information as a way to reduce knowledge uncertainty about the service offering rather than as a process by which a consumer experiences the benefits of using a particular distribution channel.

Thus there is a need for exploratory research that aims to generate consumer requirements for online information search.

In terms of increasing opportunities for trial, several authors discuss the possibility of either banks having in-branch terminals (Sathye 1999, Black et al 2001, Waite and Harrison 2004) or supplying staff to assist in trial (Durkin 2004). In-branch terminals have proved successful in encouraging adoption in Australia (pieNetworks Ltd 2001). However the long-term practicalities of these approaches are debatable in an industry that is adopting remote delivery as a method of reducing staffing and branch costs (Howcroft 1992, 1993, Devlin 1995). Thus, given the link between information search and subsequent online purchase shown within Internet research, it is considered worthwhile to explore consumer expectations of their bank's web site for information seeking and the influence on intention to use.

2.13.2 Perceptions of Risk and Online Banking

Findings from several studies show that perceptions of risk adversely influence adoption (Tan and Teo 2000, Howcroft et al 2002, Curran and Meuter 2005, Kuisma et al 2007). In these studies sources of online banking risk are identified as including; system failure, user error, the ability of unauthorised others to access the account and risk in not being able to rectify any mistakes that occur (Gerrard and Cunningham 2003, Lee et al 2005). Sathye (1999) finds that security concerns are the main reason for non-adoption amongst those who were aware of the service being on offer (77%, n=53). Black et al (2001) and Lichtenstein and Williamson (2006) identify "convenience risk" as a deterrent in terms of additional time being needed to access the service by logging on and the need to check the details of the transaction in case a mistake is made. Financial risk is also identified in terms of making an error and lack of account security (Black et al 2001, Lee et al 2005).

Little and Melanthiou (2006: 432) discuss the influence of uncertainty and risk on online banking. They argue that consumers with no online banking experience will be uncertain about the consequences of use and the probability of these consequences occurring. To pursue their thesis they undertake a study that focuses on both risk and uncertainty as distinct constructs. In terms of online banking risk they find that

consumers agree that the Internet is an insecure place and that online banking may result in others gaining account access and committing fraud. Participants did not perceive any time risk or social risk and were indecisive over the degree of performance and psychological risk. These findings indicate areas where uncertainty about consequences and their probabilities means that a risk evaluation is not forthcoming.

In terms of uncertainty Littler and Melanthiou (2006) find that participants are uncertain about the degree of difficulty in undertaking an online transaction, the credibility of information about online banking and their ability to make a judgement about online banking brands. In contrast participants are certain that they will explore all options before taking a decision to use online banking and that they will choose the best mode of online banking for them. These findings provide some insight into consumer perceptions, however whilst the survey sample included both online banking users and non-users it was compiled on the basis of convenience and did not control for Internet adoption. Thus when Internet non-users were stating their perceptions of uncertainty and risk they may have been giving their perceptions of the Internet in general and not their response to the specific context of online banking adoption. Thus there remains a need for additional research in this area that controls for attitudes towards the Internet.

There are indications that risk perceptions relate to the service being provided, the customer support expected and the functionality of the technology. For example, Flavian et al (2006) identify a clear relationship between trust in a traditional bank provider and intention to bank online. Several authors propose that e-banking trust involves not only trust in the service provider but also the transaction medium. For example, Lichtenstein and Williamson (2006) find that consumers confuse and intermingle the concepts of “security”, “privacy” and “trust”. They find that consumers distrust banks “to do the right thing” in terms of rectifying mistakes, ensuring their account security and guaranteeing privacy but that the same consumers do not necessarily distrust the Internet. Gefen et al (2003: 52) argue that when examining online trust it is important to distinguish between “the technical attributes of the web site and consumer trust in the e-vendor”. Yousafzai et al (2005: 183) also

identify e-banking trust as involving trust in “two discrete but nonseparable aspects...the bank providing e-banking services... and trust in the integrity of the transaction medium, that is the Internet”. Thus there is evidence that a finely detailed approach to assessing online banking risk is required.

Several authors have attempted to formulate strategies that banks might use in order to reduce the influence of risk and earn consumer trust. Suggestions include: guaranteeing against financial loss (Sathye 1999, Sarel and Marmostein 2003, Littler and Melanthiou 2006), providing online banking simulations (Black et al 2001, Littler and Melanthiou 2006, Nor and Pearson 2007) and ensuring that personnel are available to offer support and reassurance (Lichtenstein and Williamson 2006, Littler and Melanthiou 2006). In general these suggestions are targeted at organisational objectives rather than addressing issues of web site design despite Internet research showing presence and quality of web site attributes play a part in a consumer risk evaluation (Fogg et al 2001, Mattila et al 2003).

Curran and Meuter (2005:110) advise banks to focus on consumer reaction to SST design and to take account of individual preferences. They highlight the importance for banks to pay attention to this matter warning that:

The perceptions of on-line banking may not change from that of a risky method of handling banking transactions and that would seem to be a most discouraging prospect for the banks who have invested so much in the development of this SST. (p 110)

Thus there is a need for more information into aspects of web site design to inform financial services practice.

2.13.3 Adopter Characteristics: Online Banking

Several online banking studies report on the socio-demographic characteristics of adopters and non-adopters, however there is conflicting evidence on the influence of these variables on adoption (Guerrero et al 2007). This section will now summarise findings according to gender, age, income and education.

2.13.3.1 Socio-Demographic Variables

In terms of gender, Howcroft et al (2002) find that males expressed a higher preference for acquiring a current account using the Internet compared to females and conclude that these results could indicate that females have less confidence in online transacting compared to males. Several studies have found that men are more likely to bank online (Karajaluoto et al 2002, Matilla et al 2003, Laforet and Li 2005, Wan et al 2005, Gerrard et al 2006, Flavian et al 2006 and Mavri and Ioannou 2006). However there are also a number of studies that do not find gender to be significantly associated with online banking adoption (Liao and Cheung 2002, Pikkarainen et al 2004, Kolodinsky et al 2004, Lai and Li 2005, McKechnie et al 2006, Awamleh and Fernandes 2006, Hernandez and Mazzon 2007, Eriksson and Nilsson 2007, Poon 2008).

With regards to age, there is evidence that younger customers are more likely to bank online (Kolodinsky et al 2000, Karjaluoto 2002, Mattila et al 2003, Flavian et al 2006). Howcroft et al (2002: 117) note that there are generational differences in channel preference finding that:

Age was also a significant factor with regard to the Internet with consumers aged 18-25 expressing the highest preference for this channel.

However there are also several studies that do not find age to be associated with online banking adoption (Sathye 1999, Pikkarainen et al 2004, Lee et al 2005, Lassar et al 2005, Lai and Li 2005, McKechnie et al 2006, Awamleh and Fernandes 2006, Yiu et al 2007, Hernandez and Mazzon 2007, Eriksson and Nilsson 2007). Several of these studies use convenience samples (Pikkarainen et al 2004, Hernandez and Mazzon 2007) or data from student samples with a limited age range (Lassar et al 2005, Lai and Li 2005, Awamleh and Fernandes 2006) which might account for the results. However some studies do use random sampling strategies on populations containing a range of age groups (Sathye 1999, Lee et al 2005, McKechnie et al 2006, Yiu et al 2007, Eriksson and Nilsson 2007).

There has been some support for income being a positive influence (Kolodinsky et al 2000, Matilla et al 2003, Pikkarainen et al 2004, Lassar et al 2005, Wan et al 2005,

Yiu et al 2007). For example Flavian et al (2006) find that the likelihood of an individual adopting online banking increases with income and that someone earning less than €24,000 is unlikely to conduct banking using the Internet. However there are also several studies that do not find a link between income and online banking adoption (Ramaswami et al 2000, Lee et al 2005, Mavri and Ioannou 2006, McKechnie et al 2006). Finally, the findings for the influence of education are also mixed. For example, Kolodinsky et al (2000) find that possession of a college degree is not significantly related to adoption. However Mattila et al (2003) find that the level of education increases the likelihood of mature consumers using Internet banking.

Overall the mixed nature of these findings might be further evidence that the impact of socio-demographic influences is lessening over time or it could be due to sample limitations. These contradictory findings reinforce the need for rigorous research that moves beyond socio-demographic descriptors in its exploration of adoption behaviour. Thus whilst socio-demographic variables cannot be discounted, research into online banking should consider a range of other characteristics that might be associated with adoption.

2.13.3.2 Attitudinal and Behavioural Characteristics

Whilst there is extensive research into the influence of socio-demographic variables there are fewer studies that examine other factors that can be used to characterise adopter and non-adopter groupings (Guerrero et al 2007). Shao (2007) notes that more studies are needed that explore a wider range of adopter and non-adopter characteristics. This sub-section will now summarise findings on the influence of attitudinal and behavioural characteristics related to the Internet and the product.

In terms of Internet use, Tan and Teo (2000) found that Internet experience increases the likelihood of adoption. There is a link between positive evaluation of online banking characteristics and prior use of the Internet. For example, Black et al (2001) find that Internet experience reduces perceptions of complexity and increases perceptions of compatibility whilst non-users have a greater fear of making mistakes and experiencing unauthorised access to their account. There are also indications

that prior Internet use is associated with reduced perceptions of online banking risk and risk-tolerance. Lichtenstein and Williamson (2006) suggest that Internet users are more risk tolerant, view online banking risk as manageable and overlook risk in favour of the convenience.

Some studies have explored both the influence of Internet use and attitude towards the Internet. Kolodinsky et al (2000) find that a positive attitude towards technology increases the odds of adoption more than demographic characteristics, with those defined as “Technophiles” being 10.7 times more likely to use PC banking. Black et al (2001) find that those who were users of online banking were also strongly disposed towards using the Internet in general and that those who felt resistant and antipathetic towards SSTs were Internet non-users. Walker and Johnson (2003: 127) argue that if one simply prefers face to face contact then the likelihood of using an SST is remote even if there are distinct benefits. They propose that:

Therefore it is reasonable to expect that customer perceptions of the relative advantages offered by technology-enabled services will have some bearing on the extent to which personal contact in service provision is preferred or desired.

Sarel and Marmostein (2003) report that active users of online banking are “hooked” on the medium. They write that:

These consumers show a strong preference to conduct as many activities as possible on the Internet...and are constantly looking for new applications and greater Internet involvement. Most of the active users in this study reported strong commitment to the Internet; they enjoy using it and were willing to endure some initial difficulties with online banking hoping that systems would improve over time.

Akinci et al (2004) find that online banking users agree with attitudinal statements such as “I prefer technological convenience”, “I like to make use of technology”, and “I like things that are automated or computerised”. Thus it is important for online banking research to acknowledge and take into account not only prior experience but also positive attitudes towards the Internet. For example, an Internet user may have financial and emotional investment in the medium and greater knowledge about its capabilities which might result in a predisposition towards online banking.

Few studies have focused on systematically determining the influence of product-related attitudes and behaviours on online banking adoption. For example, Sarel and Marmostein (2003) characterise customers as being “indifferent” towards online banking but whilst they comment extensively on attitude towards technology they do not probe for attitude towards the product. In the context of telephone banking distribution, Lockett and Littler (1997) found no relationship between the number and nature of financial products owned and the frequency and nature of ATM use and the adoption of telephone banking. Kolodinsky et al (2004) focus on ATM and direct deposit experience and find that respondents that use these channels are more likely to adopt online banking. However it can be argued that Kolodinsky et al (2004) have shifted focus towards measuring prior experience of remote technology and not products. Indeed it has been shown that satisfaction with ATMs is associated with a positive attitude towards online banking (Devlin and Yeung 2003).

Hitt and Frei (2002) find that PC banking customers (as opposed to online banking adopters) acquire more assets at a faster rate with higher balances and fewer liabilities at a slower rate and with lower balances compared to non-PC banking customers. Durkin and Howcroft (2003) note that online banking increases control over balance transfers and thus provides the opportunity for a consumer to move their money to gain a higher return. Thus it can be argued that online banking will have greater relative advantage for those consumers who have a greater understanding of financial affairs and that the influence of product knowledge is worthy of greater attention.

In terms of attitudes towards banking only one study by McKechnie et al (2006) was identified that explored directly the influence of product category involvement on online banking adoption. McKechnie et al (2006) note that product category involvement is a neglected construct in online adoption studies however their study into online banking adoption did not find any link between product involvement and a positive attitude towards online banking. Durkin (2007) finds that the influence of risk and trialability varies according to levels of product complexity and involvement. He argues that it is important to gain awareness of these predictors in

order to ensure that resources are deployed effectively. Thus research that incorporates a measure of product involvement is needed.

It is acknowledged that there are a considerable range of attitudinal and behavioural characteristics that can be explored in relation to online banking behaviour. For example, studies have examined the nature of product holdings (Hitt and Frei 2002), decision-making styles (Durkin 2004), situational competence (Mattsson and Helmersson 2005) and cultural values (Rugimbana 2007). This thesis focuses on exploring the influence of product and channel variables. This decision was taken on the basis that previous studies have shown that attitude towards and experience with the Internet influences perceptions and adoption of online banking (Tan and Teo 2000, Lichtenstein and Williamson 2006, Kolodinsky et al 2000, Black et al 2001). In contrast there has been limited research that explores the influence of product-related factors such as risk and involvement.

2.13.4 Summary

This discussion of the application of DoI within online banking research has critically examined current knowledge of innovation and adopter characteristics. Shao (2007) found that these are the areas of greatest interest in a literature review of 54 articles that applied a DoI Perspective to online banking. In terms of innovation characteristics it has shown that whilst consumers perceive that there are some benefits to be gained from banking online, non-adopters remain unconvinced of the advantage of online banking relative to other channels. One possible explanation for this finding is that this research was conducted at an early stage of innovation diffusion and thus there is a need for additional research in this area.

Research also shows that consumers perceive online banking as risky, however only a few studies have managed to isolate service-specific risk from Internet-specific risk due to sample limitations. In addition research also shows that consumers associate risk with the financial services provider thus a more finely detailed approach is needed when investigating this area than has been utilised previously. In particular there is little research that investigates consumer evaluation of the divisible elements

of online banking, such as information search, that might be used to trial the innovation before full adoption.

In terms of innovator characteristics research into socio-demographic influences is inconclusive. This may be due to sampling limitations or another indication that the impact of socio-demographic influences is lessening over time. Research into consumer attitudes and behaviour has shown that attitude towards and experience of the Internet is worthy of further study. In addition there is a need for research to explore the influence of product attitudes and behaviour.

2.14 Summary: DoI Perspective

This section presented an overview of the DoI Perspective that aims to identify processes and characteristics (both of the adopter and of the innovation) that promote adoption and increase the rate of diffusion over time. This perspective has been widely-used both at an individual and organisational level. Its strengths are its multi-disciplinary nature, its pragmatism and the simplicity of its approach, whilst criticisms include its fragmented nature and post-hoc descriptive formulation.

In examining how DoI has been applied to Internet adoption it was concluded that the Internet has several characteristics from which consumers can derive relative advantage both in terms of information search and transaction activity but that risk has acted as a barrier to adoption. A review of the current literature indicates that there is a clear need for research that explores risk in specific purchase contexts and for research that isolates technology-risk and task-risk from other factors.

In terms of adopter characteristics extant research shows that at the early stages of Internet diffusion adopters were identified in terms of their socio-demographic characteristics. However as time has elapsed, the socio-demographic divide between adopters and non-adopters has lessened. Thus a more considered approach that draws on attitudinal and behavioural differences is needed to capture the subtleties of innovation diffusion.

In examining how DoI has been applied to online banking adoption it was concluded that whilst consumers perceive that there are benefits to be gained from banking

online, non-adopters remain unconvinced of the advantage of online banking relative to other channels. Thus in order to understand reasons for non-adoption it is important to examine where and why online banking is failing to deliver, particularly now that penetration of online banking has increased. It was identified that research is needed in relation to online information search as an activity that informs consumers about online banking and permits low-risk trial of a bank's web site. This need is emphasised when considering the link between online information search and subsequent purchase shown within Internet research.

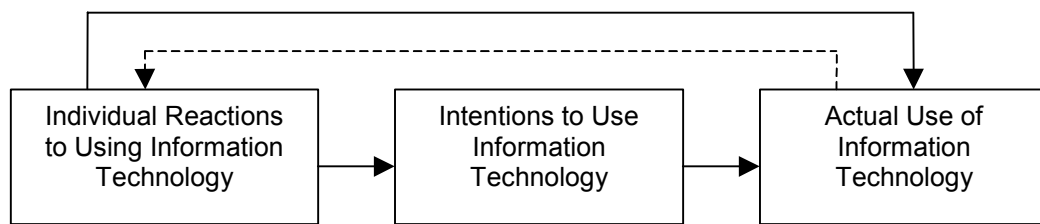
In terms of online banking adopter characteristics there is limited evidence that socio-demographic characteristics are determinant in adoption behaviour. This may be due to sampling limitations or another indication that socio-demographic influences are lessening over time. Research shows that prior Internet experience and positive attitudes towards the medium increase the likelihood of banking adoption and reduce the influence of risk. Thus it is considered appropriate to explore these influences across task conditions. Furthermore research into product-related attitude and behaviour is limited and thus additional enquiry into this area is needed.

To conclude, DoI has been criticised in terms of individual adoption behaviour because whilst it describes innovation and adopter characteristics it "provides little explicit treatment of user acceptance" in terms of attitude towards adoption (Dillon and Morris 1996: 9). This review will now address the UI Perspective. This is an approach that focuses on individual responses to new technology.

2.15 User-Intention Perspective

Research informed by the UI Perspective is focused on user acceptance. Research within this perspective seeks to predict individual acceptance of information technology by identifying attitudinal influences on use intentions (Venkatesh et al 2003). The underlying concept is that a positive reaction to using information technology leads to intended and then actual use (Figure 2.10).

Figure 2.10 The Basic Concept Underlying User Intention Models



Source: Venkatesh et al (2003:427)

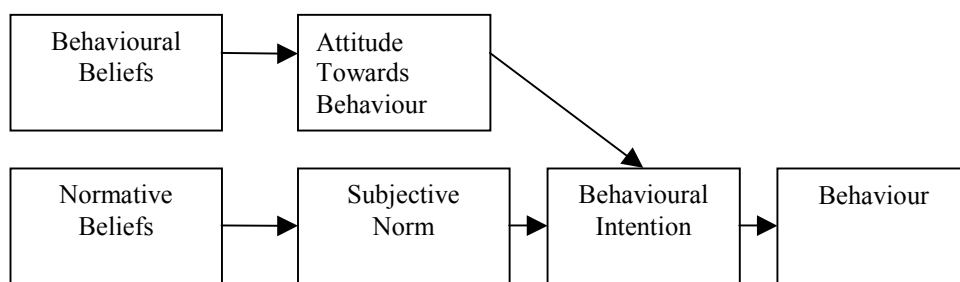
Two behavioural theories inform this approach, the Theory of Reasoned Action (TRA) (Fishbein and Ajzen 1975) and the Theory of Planned Behaviour (TPB) (Ajzen 1988, 1991)

2.15.1 Theory of Reasoned Action

TRA is concerned with the determinants of consciously intended behaviours (Figure 2.11). According to TRA, attitude towards a behaviour and subjective norms determine behavioural intention and thus actual behaviour (Fishbein and Ajzen 1975). Prior research into the link between attitude and behaviour had proved inconclusive (see Wicker 1969). Ajzen and Fishbein (1977: 888) reasoned that “a person's attitude toward an object influences the overall pattern of his responses to the object, but that it need not predict any given action.” They conclude that it is attitude towards and the subjective norm of performing a behaviour that shapes behavioural intention. Thus TRA was developed using a measure of behavioural-orientated attitude rather than object-orientated attitude (Ajzen and Fishbein 1977). Various reviews have found support for the improved predictive ability of TRA and its use of behavioural attitude (see Sheppard et al 1988, Sheeran 2002).

Salient behavioural beliefs, identified through preliminary empirical research into the behaviour under question, are antecedent to both attitude and the subjective norm (Fishbein 1967a, 1967b). Belief has two components a subjective probability component and an evaluative component (Armitage and Christian 2003). A behavioural belief is the subjective probability of a behavioural outcome multiplied by the positive or negative evaluation of that outcome. A behavioural attitude is the holistic evaluation of a behaviour based on the sum of salient beliefs (Fishbein and Ajzen 1975). A normative belief is the subjective probability that an important social referent approves or disapproves of a behaviour multiplied by the motivation to comply with or contradict that person’s view. The subjective norm is the holistic evaluation of social pressure for or against a behaviour based on the sum of normative beliefs.

Figure 2.11 Theory of Reasoned Action



Source: Fishbein and Ajzen (1975)

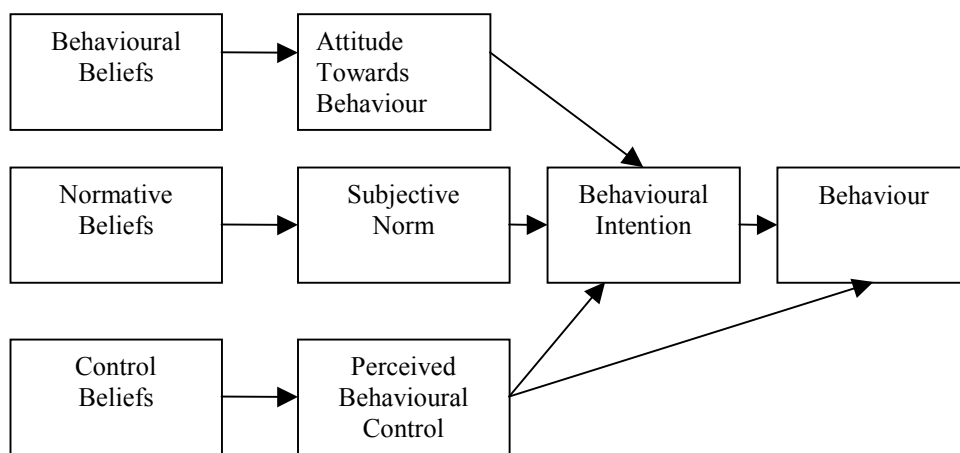
2.15.2 Theory of Planned Behaviour

A common criticism of TRA is that it takes no account of whether the target behaviour is within the individual’s control and thus it implies that the formation of intention is sufficient to ensure a positive behavioural outcome (Armitage and Christian 2003). To address this limitation Ajzen (1988) extended TRA by including an additional variable of perceived behavioural control as a determinant of both behavioural intention and behaviour and identified this as a Theory of Planned Behaviour (Figure 2.12). Salient control beliefs are antecedent to perceived behavioural control and have two components. “Control beliefs are a function of perceived frequency of facilitating or inhibiting factors multiplied by the power of

those factors to inhibit/facilitate the behaviour in question” (Armitage and Christian 2003:191).

There are a wide variety of User-Intention models that have been developed within Ajzen and Fishbein’s paradigm (see reviews by Venkatesh et al 2003, Cheung et al 2003, Monsuwe et al 2004). Muthitacharoen et al (2006) note that the UI Perspective has gained in popularity due to its flexibility in explaining a wide range of goal and task behaviours. This review focuses on the Technology Acceptance Model (TAM) as a widely-used model that draws on TRA and TPB in order to predict user acceptance of new technology.

Figure 2.12 Theory of Planned Behaviour



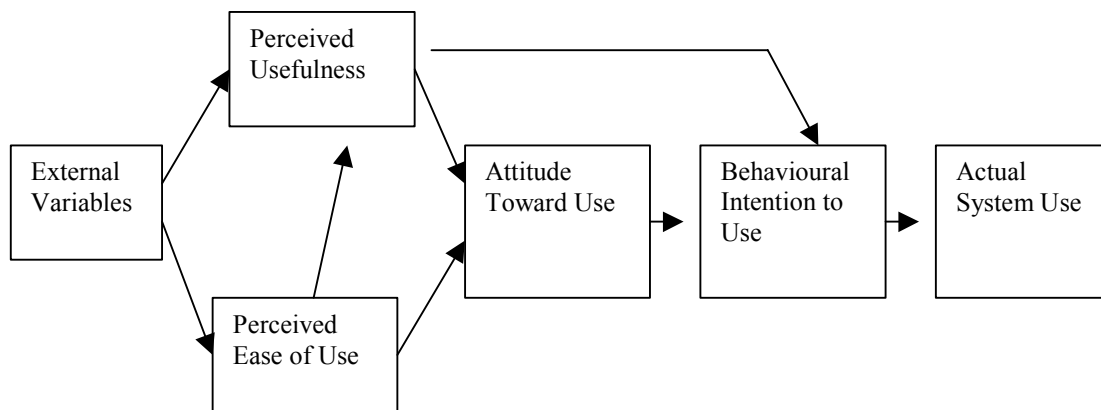
Source (Ajzen 1988)

2.15.3 The Technology Acceptance Model

The Technology Acceptance Model (TAM) (Davis et al 1989) is considered a dominant model for determining the likelihood of individual adoption of technology (Wixom and Todd 2005). For example, a citation analysis undertaken for this review, using the Business Source Premier database, shows 538 citations since publication in 1989. Davis et al (1989) propose that technology acceptance is driven by two salient behavioural beliefs towards technology use that determine behavioural attitude (Figure 2.13). These beliefs are;

1. Perceived Usefulness, defined as the “user’s subjective probability that using a specific application system will increase his or her job performance” and
2. Perceived Ease of Use, defined as “the degree to which the user expects the target system to be free of effort” Davis et al (1989: 985).

Figure 2.13 Technology Acceptance Model (TAM)



Source: Davis et al (1989)

TAM focuses on individual response to a technology and not on external stimuli that might shape the adoption decision. External antecedents may include system attributes, user characteristics, task attributes, the process of IT implementation and organisational influences (Davis et al 1989). In application TAM focuses on measuring “the internal psychological variables through which numerous external variables studied in IS research achieve their influence on user acceptance” (Davis et al 1989: 984-985). Thus, external variables are represented within the model as antecedent to and fully moderated through behavioural belief

Davis’ model is considered parsimonious (Karahanna and Straub 1999), easy to understand and simple to apply (Taylor and Todd 1995). In addition, there is empirical evidence that TAM has explanatory power and is able to account for over 40 percent of the variance in individual intention to use technology (Featherman and Fuller 2002, Venkatesh et al 2003).

However, there is ongoing debate about the ordering of the attitudinal variables within TAM. For example, IS research that finds that “perceived usefulness” is a more important predictor of use than “perceived ease of use” (Davis et al 1989, Hu et

al 1999). There is also debate over the extent to which TAM offers a distinct approach to investigating technology adoption. For example, Misiolek et al (2002: 4) argue that if TAM is compared to DoI then:

It appears that the technology acceptance model focuses in detail on the second stage of the innovation adoption process (i.e. persuasion) and, in particular, on two perceived characteristics of an innovation, ease of use (complexity) and usefulness (relative advantage) as a function of trial.

Karahanna and Straub (1999) note the similarity between the formulation of perceived usefulness” and “ease of use” constructs and the DoI constructs of “relative advantage” and “complexity”. Plouffe et al (2001) compare TAM’s two belief constructs to a wider set of belief constructs based on DoI innovation characteristics (Moore and Benbasat 1991) and find that an expanded set of beliefs has superior explanatory power. Chen et al (2002: 708) note that TAM and DoI complement each other. They argue that:

[DoI] involves the formation of a favorable or unfavorable attitude towards an innovation; however, it does not provide further evidence on how the attitude evolves into the accept/reject decision. TAM, on the other hand, provides theoretical linkages among beliefs, attitude, intention and action.

One limitation of TAM is that it was primarily developed within an organisational context and is designed to predict adoption after a brief period of interaction with an information system, for example after a training session or pre-purchase trial of the technology (Davis et al 1989). Thus the model is formulated to predict intention on the basis of perceptions of the innovation’s usefulness and ease of use. Within the disciplines of psychology and marketing, perceptions are defined as an active response after experience with the evaluative object (Garner 1966). The use of perception is not problematical in an organisational setting where perceptions are formed through prior limited, but mandatory, trial of the innovation. However TAM is difficult to apply where participants have some awareness but limited knowledge of the innovation (Agarwal and Prasad 1998). Agarwal and Prasad (1998: 16) note that

Despite the existence of several models and despite the divergences in hypothesised relationships, a common theme underlying these models is the inclusion of perceptions of an innovation as key independent variables. The technology acceptance model and its precursor the theory of reasoned action both postulate that perceptions or beliefs about the innovation are instrumental in the development of attitudes that eventually result in system utilisation behaviour.

Furthermore by being formulated within an organisational context TAM does not account sufficiently for completely free individual choice of innovation adoption. In an attempt to address this limitation Venkatesh and Davis (2000:188) aligned the model with TPB and included a measure that approximated the construct of Perceived Behavioural Control, which they labelled as “Voluntariness”. Despite this there are continued criticisms that the application of TAM is particularly limited where individuals are autonomous to select from numerous alternative technologies to achieve their goals (Lin et al 2005).

A further limitation of TAM is its focus on only two attitudinal antecedents. This means that it lacks richness, generalisability and fails to give sufficient practical design guidance (Taylor and Todd 1995, Plouffe et al 2001). Studies that have used TAM to model online consumer behaviour have confirmed that a non-organisational context requires richer and more complex constructs to explain adoption (see Lederer et al 2000, Koufaris 2002). Overall, Orlikowski and Iacono (2001: 129) label the UI Perspective as:

a proxy view of information technology, where one or a few abstracted elements are focused on and assumed to represent critical aspects of the technology.

2.15.4 Summary

The UI Perspective draws on two behavioural theories (TRA) and (TPB) in an attempt to determine the extent to which individual responses to new technology result in adoption. The strength of this approach is that it generates insight into the influence of various cognitive and affective responses to an innovation in a dynamic model. However a criticism of the UI Perspective is that it is too selective and too abstract.

TAM is a widely-used model that attempts to predict new technology adoption based on beliefs of perceived usefulness and perceived ease of use. TAM has been praised for its parsimony and predictive ability, however its development within an organisational context has resulted in problems when applying it to a consumer setting. Limitations include its reliance on a period of prior use in order to form perceptions and an inability to account for free choice. This review will now provide an overview of how this approach has been applied to Internet adoption before proceeding to an evaluation of online banking research.

2.16 Application of TAM to Internet Research

TAM has been widely applied to studies of Internet adoption both in an organisational and in an individual context. Organisational-based research has examined a variety of adoption behaviours from communication use (i.e. Kettinger and Grover 1997, Karahanna and Straub 1999) to B2B transacting (i.e. Loh and Ong 1998, Boyer et al 2002, Gallagher and Wang 2002, Hartley et al 2004). Individual user research has examined online transaction for both goods (i.e. Koufaris 2002, Gefen et al 2003, Shih 2004, Lee et al 2006) and latterly services (i.e. Lassar et al 2005, McKechnie et al 2006, Kamarulzaman 2007, Klein 2007).

There is evidence within Internet research that “perceived ease of use” is an antecedent to “perceived usefulness” and thus only an indirect influence on “intention to use” (Koufaris 2002, Kamarulzaman 2007, Klein 2007). This ordering is also consistent with analysis by Monsuwe et al (2004) that characterises “perceived usefulness” as consumer evaluation of the final outcome and “ease of use” as an evaluation of the process leading to the final outcome.

One explanation for these results might be a failure to account for differences in the prior experience of users since both Kamarulzaman (2007) and Koufaris (2002) gathered data from participants who were experienced in Internet use. For example, Castaneda et al (2007) show that for inexperienced users of web sites “perceived ease of use” exerts the most influence on intention to revisit. However, in the context of e-mail adoption Szajna (1996:88) finds that for both pre-implementation and post-implementation “ease of use” fails to have a direct relationship on “use intention”

and that the influence of “ease of use” declines over time. She concludes that “the easier an [innovation] is to use the more useful it is perceived to be” and that as a user becomes more experienced the association between “ease of use” and “usefulness” lessens. Thus these findings emphasise the need to take into account user experience when conducting Internet research.

Task condition may also influence the association between “perceived usefulness”, “perceived ease of use” and “intention to use”. For example, Gefen and Straub (2000) find that the influence of “perceived ease of use” on intention increases when the online task is intrinsic to the web site. Intrinsic tasks are those “where the [web site] itself provides the primary “ends” i.e. the product or service” (p 3). They argue that a book purchase is an “extrinsic” task, that is one where using the web site is “only the means to achieving the primary product or service... [and] is the interface through which one accomplishes a goal” (p3). This finding supports the stance of this thesis that detailed research is needed to tease apart the subtleties of the online experience under investigation.

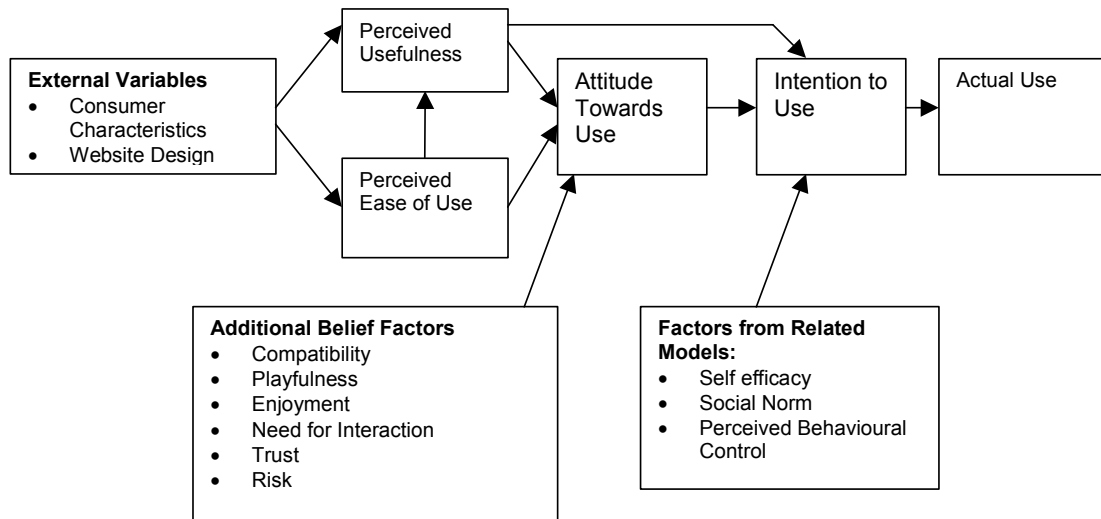
Several authors have found that TAM is limited in its application to consumer adoption of the Internet and have sought to extend the model (Moon and Kim 2001, Monsuwe et al 2004) or supplement it by combining it with other perspectives (Chen et al 2002). In the context of the wider IS literature Wixom and Todd (2005) summarise three primary extensions as:

1. the introduction of additional factors related to TRA and TPB such as the subjective norm and perceived behavioural control,
2. the addition of key related factors from DoI theory such as trialability, compatibility and observability
3. examination of external variables that are either antecedent to or proposed as moderators of “perceived usefulness” and “ease of use”

Within Internet adoption research extensions have included additional variables such as: compatibility (Chen et al 2002), playfulness (Moon and Kim 2001), consumer characteristics (O’Cass and Fenech 2003), enjoyment (Monsuwe et al 2004), Internet

self-efficacy (Eastin and LaRose 2000), perceived behavioural control (Lin 2007), the need for interaction (Dabholkar and Bagozzi 2002), the influence of the social norm (Malhotra and Galletta 1999), trust (Gefen et al 2003) and risk (Pavlou 2003). Figure 2.14 illustrates how TAM has been extended (Wixom and Todd 2005).

Figure 2.14 Examples of Extension to TAM within Internet Research



Adapted from Wixom and Todd (2005)

Davis et al (1989) proposed that TAM should be used as a starting point for an examination of technology adoption. Sharp (2006: 25) concludes that the model exhibits “flexibility” and “applicableness” due to the “numerous direct determinants and external variables that have been added to the model”. It is possible to debate extensively the wisdom of adding numerous variables to a model. Model extensions might weaken model parsimony in terms of predictive efficiency and ease of implementation. Kaplan (1998: 281) argues for simplification in that it facilitates understanding. He states that: “science always simplifies; its aim is not to reproduce the reality in all its complexity but only to formulate what is essential for understanding prediction, or control”. However an alternative view is offered by Bradley and Schaefer (1998: 36) who contend that over-simplified modelling “inherently misrepresents” social situations that are essentially very complex. TAM is a model that was developed within an organisational setting to explain the acceptance of workplace information systems. Thus TAM should be applied to

Internet adoption with an awareness of its limitations and also an acknowledgement of the impact that adding variables might have to its utility.

2.16.1 Summary

This section has examined how TAM has been applied to Internet adoption as an illustration of the UI Perspective. TAM was selected since it is the dominant model within IS research and it has been widely applied within Internet research. There is evidence within Internet research that “perceived ease of use” operates as an antecedent to “perceived usefulness”. There is evidence that the causal ordering of the model is affected by the degree of experience that research participants have of the Internet and also by the online task that is being undertaken.

There have been several studies that have extended TAM with a range of factors taken from either the original theoretical underpinning of TRA and TPB or other theories of innovation adoption. The need for these additions suggests that TAM’s origins in organisational IS implementation has resulted in an inability to fully encompass the complexities of online consumer behaviour. Whilst research that extends TAM enriches understanding of the process and influences upon Internet adoption it also reduces the parsimony and efficiency that characterise the original model.

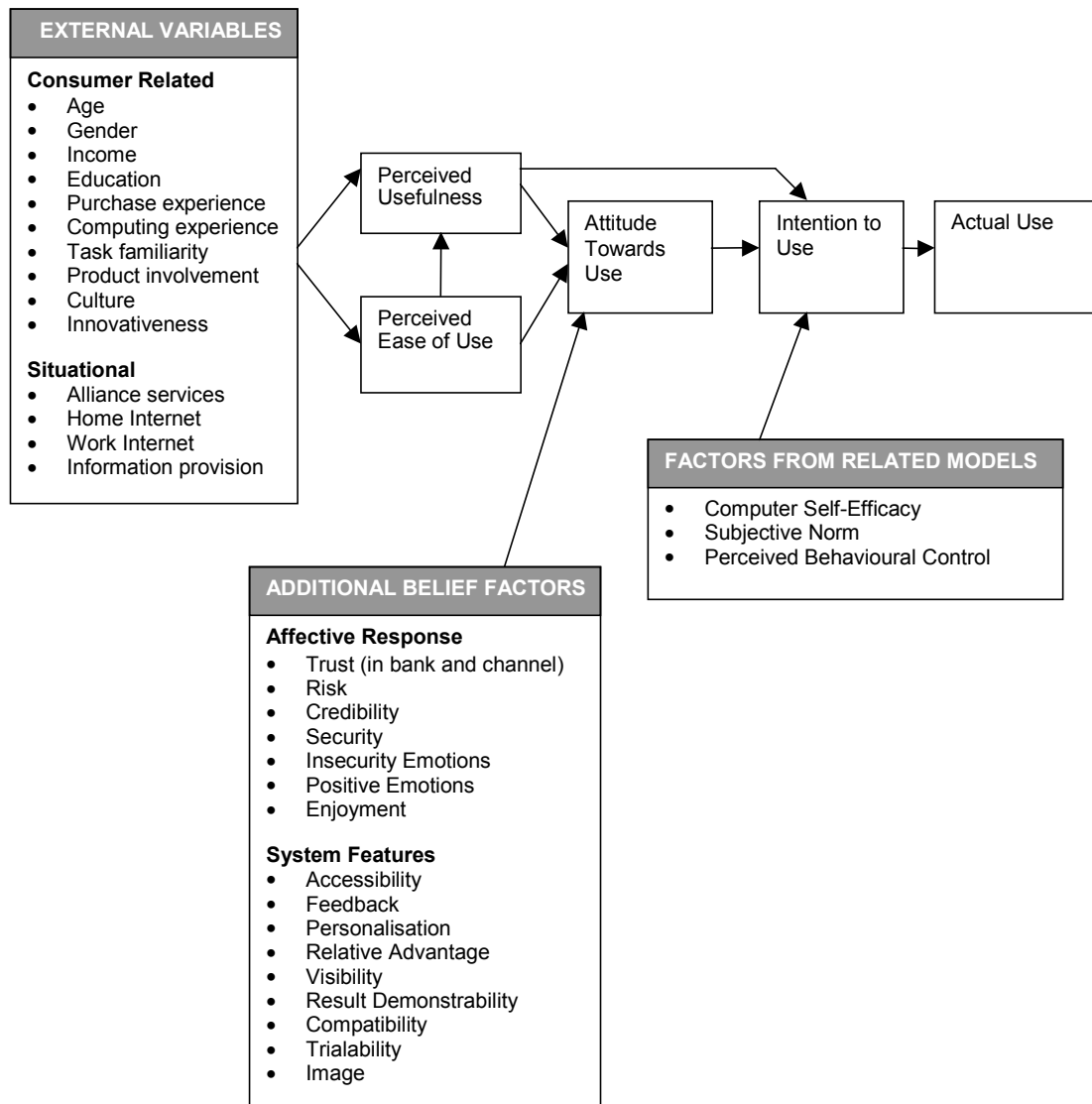
2.17 Application of TAM to Online Banking

This review now provides a critical evaluation of the application of TAM to online banking adoption. The aim of this section is to pinpoint specific gaps in current understanding, which will help define suitable areas for enquiry. In terms of its use the UI Perspective accounted for 36% of the studies in the Section I review and of these 79.3% used TAM as a foundation either as originally formulated or with extensions. An overview of these extensions is given in Figure 2.15 and detail is presented in Appendix I.

Additional external variables considered are situational influences, such as access to the Internet at home and at work. (McKechnie et al 2006, Hernandez and Mazzon 2007). Other studies examine web site attributes. For example, Chau and Lai (2003)

examine the influence of “alliance services” which is the offering of supplementary products and services on a web site through alliances with other companies. They find that this additional element of service has a positive impact on “perceived usefulness”.

Figure 2.15 Extension to TAM within Online Banking Research



Several consumer-related characteristics are also used to supplement TAM. For example, Pikkarainen et al (2004) find that age and gender are not significant whilst income is positively related to “perceived usefulness”. McKechnie et al (2006) find that age, gender and income are not influences on either “perceived ease of use” or “perceived usefulness”. Hernandez and Mazzon (2007) examine age, gender,

education and income but find that only education is a statistically significant influence. Only one study by Yiu et al (2007) finds that being male, younger, having a degree education and a higher income are positive influences on “perceived usefulness”. In terms of other attitudinal and behavioural characteristics, Yiu et al (2007) find that personal innovativeness is positively related and perceived risk are negatively related to banking adoption. McKechnie et al (2006) find that product category involvement is positively related to “perceived ease of use” but not “perceived usefulness” whilst purchasing experience is positively related to both “perceived usefulness” and “perceived ease of use”.

There have been limited attempts to assess the influence of “perceived usefulness” and “perceived ease of use” on adoption in the context of different online tasks. For example, Chau and Lai (2003) explore task familiarity which they define as “the degree of non-variability and certainty of activities that a user needs to resolve when using the technology” (p128). They argue that a good match between task activities and a bank web site results in task completion taking less time. Thus, they propose that “task familiarity” is positively related to “perceived usefulness”.

However the focus of online banking research is on account management. Few studies examine whether use or intention to use is for online information seeking. For example Pikkarainen et al (2004) introduce “information on online banking” as an explanatory variable for “actual use” however they do not report on whether actual web site use is for information search or account management. McKechnie et al (2006: 392) apply TAM to the use of online banking “right up to the transaction stage” for financial services and whilst they acknowledge that information search is a distinct activity they include it in “a continuum” of information search and the number of purchases made.

Within Internet research it has been shown that the influence of “perceived usefulness” and “perceived ease of use” vary according to whether the task is intrinsic or extrinsic to the web site (Gefen and Straub 2000). For example it can be argued that online information search is an intrinsic task through which the individual attempts to meet their knowledge means wholly online. In contrast

account management, whilst accomplished online, depends on other external “back office” functions in terms of the financial services provider to be completely fulfilled and thus is an extrinsic task. Hence there is a need to generate insight into how consumers perceptions and attitude towards using online banking influences their intention to adopt the channel for both information search and account management.

Within these studies TAM predicts between 3% (Suh and Han 2002) to 44% of the variance in actual use (Guriting and Ndubisi 2006) with a mean of 22%. In terms of usage intention the variance explained is much higher 75% (Suh and Han 2002), 62% (Wang et al 2003) and 60% (Hernandez and Mazzon 2007), with a mean of 66%. Whilst variance in intention compares most favourably with a typical figure of 40% of variation in usage intention and behaviour given by Venkatesh and Davis (2000) the results for actual use are disappointing.

Sampling limitations may account for these findings. For example of these studies only 26% used probability sampling strategies. Of even more concern are indications that the model has been used to capture perceptions amongst participants who have not been exposed to online banking (Wang et al 2003, Lai and Li 2005, Sukkar and Hassan 2005, McKechnie et al 2006, Yiu et al 2007). For example Cheng et al (2006) when gathering information about adoption intentions ask participants whether they “would find Internet banking useful”(p 1570) and accordingly re-define Davis et al’s (1989) perceptions as “beliefs” (p 1562). A second possible explanation is that whilst TAM may be capturing influences on online banking intention it fails to fully account for influences on actual adoption, such as perceptions of risk and uncertainty. A third possible explanation might be failure to account for actual use in terms of distinct online tasks.

In order to enrich the model several researchers have combined TAM with other theories (Table 2.3). TAM has been combined with a variety of constructs with an aim of enhancing its application to a consumer rather than an organisational context, for example by including constructs such as “trust” and “satisfaction”. Other researchers have combined TAM with theories that detail web site attributes such as service quality and DoI in order to enhance the actionability of the findings.

Similarly service quality and DoI approaches have been combined with measures of intention or frameworks such as TPB and TRA in order to fully identify any links to subsequent consumer behaviour.

Table 2.3 TAM Combined with Alternative Theories.

Combination	No	Studies
TAM + Trust	3	Suh and Han (2002), Suh and Han (2003), Eriksson et al (2005)
TAM + Satisfaction	1	Liao and Cheung (2008)
TAM + DoI	4	Tan and Teo (2000), Awamleh and Fernandes (2006), Gerrard et al (2006), Yiu et al (2007)
TAM + Service Quality	1	Liao and Cheung (2002)
DoI + TPB	1	Liao et al (1999)
DoI + TAM + TPB +TRA	1	Hernandez and Mazzon (2007)

2.17.1 Summary

This examination of the application of TAM to online banking research has identified that it has been a widely-used model. There have been a number of studies that have examined the influence not only of the core TAM constructs but also the effect of additional variables. Despite these extensions the ability of TAM to predict actual online banking use remains poor. There are several explanations that can be offered for these results. These include: poor sampling design, a model that is unable to fully account for the influences on actual use and a failure to identify the precise online task for which the technology is being used.

2.18 Summary: User-Intention Perspective

This section presented an overview of the UI Perspective with a particular focus on the application of TAM within Internet and online banking research. TAM is the dominant model within UI research and within online banking research that draws on this approach. The strengths of TAM are its parsimony and its predictive ability; however these strengths are also weaknesses when it is applied to a complex consumer setting. One particular issue in the application of TAM is its reliance on prior exposure in order that perceptions can be gathered.

In examining how TAM has been applied to Internet adoption it was identified that the ordering of “perceived usefulness” and “perceived ease of use” has been shown to vary according to the degree of prior exposure and also the nature of the online task. It was concluded that as Internet research progresses, a more detailed research is needed that teases apart the subtleties of the online experience for investigation. It was also shown that TAM has been subject to various extensions in order to align it more closely with the consumer context. However it was noted that extending the original model might result in a loss of its predictive efficiency and ease of implementation.

In examining how TAM has been applied to online banking research it was noted that it was also a dominant model. Several additional variables have been added to the original formulation including a range of consumer characteristics including both socio-demographic and behavioural influences. Despite these extensions the predictive ability of the model in terms of actual use remains weak. Several explanations were offered, including weaknesses in sampling strategy and a failure to account for both intrinsic and extrinsic tasks sufficiently.

Whilst research within the UI Perspective is able to generate insight into the influence of various cognitive and affective responses to the innovation it has been criticised as too abstract. This abstraction results in limited understanding of how the specific attributes of the IT system (if any) stimulate individual response. This review will now address the ED Perspective, an approach that has as its focus the provision of a detailed evaluation of technology functionality.

2.19 Expectancy-Disconfirmation Perspective

Research informed by the ED Perspective has as its focus specific design elements of an innovation and thus provides results that are actionable for business practice (Loiacono et al 2007). Research within this perspective identifies the criteria by which users form an evaluative judgement of information technology and then seeks to explain or predict use based on this evaluation. This approach measures user expectations and perceptions of IS performance both overall and on an attribute-by-attribute basis.

Expectancy-Disconfirmation theory proposes that consumers make assessments of product performance based on a comparison of a-priori expectations with post-hoc perceptions (Oliver 1996). This comparison results in either: positive disconfirmation where performance is above standard, negative disconfirmation where performance is below standard or zero disconfirmation where a-priori expectation standards are met (Oliver 1996). Consumer behaviour literature has formulated the concepts of consumer satisfaction and service quality based upon an evaluative gap model of differences between prior and post experiential evaluation and response (see for example Parasuraman et al 1988, 1991).

2.19.1 Consumer Satisfaction and Service Quality

Consumer satisfaction is defined as “a judgement that a product or service feature, or the product or service itself, provided (or is providing) a pleasurable level of consumption-related fulfilment” (Oliver 1996: 13). Service quality is defined as a “judgement about an entity’s overall excellence or superiority” (Parasuraman et al 1988: 15). Thus, consumer perceptions of service quality and customer satisfaction are related but distinct concepts (Bolton and Drew 1991). However a key difference between satisfaction and service quality evaluation is that customer satisfaction is considered transaction and time specific whilst perceived service quality is a long-term general attitude (Bitner 1990, Giese and Cote 2000).

Within the consumer behaviour literature there is debate over the relationship between satisfaction and service quality (Oliver 1993, Taylor and Baker 1994).

Some researchers argue that the presence of customer satisfaction is a requirement of a positive service quality evaluation (Bitner 1990, Parasuraman et al 1988). Other authors propose that the presence of service quality will result in customer satisfaction (Woodside et al 1989, Cronin and Taylor 1992, Anderson and Sullivan 1993, Oliver 1993, Taylor and Baker 1994). However, ongoing research appears to indicate that perceived service quality is an antecedent of customer satisfaction (Giese and Cote 2000). Overall, it is generally acknowledged that satisfied customers are more inclined to return to a service outlet, to repurchase, to spread favourable word of mouth, and to be less sensitive to price competition (Reichheld et al 1990, Zeithaml et al 1996). Hence service quality, as an antecedent to satisfaction, is considered to be source of differentiation and competitive advantage for services (Ennew et al 1993).

2.19.2 Marketing and IS Research Streams

Within the marketing discipline there are two main streams of service quality literature, SERVQUAL and the Nordic School. SERVQUAL is an instrument that measures service quality using five dimensions (Parasuraman et al 1988, 1991) (Table 2.4). Consumer evaluation of service quality is measured by calculating and aggregating the difference between two 22-item question batteries that measure customer expectations and perceptions.

Table 2.4 Dimensions of SERVQUAL

Dimension	Definition
Reliability	The ability to perform the promised service dependably and accurately
Responsiveness	Willingness to help customers and provide prompt service
Assurance	Employees' knowledge and courtesy and their ability to inspire trust and confidence
Empathy	Caring and individualised attention given to customers
Tangibles	Appearance of physical facilities, equipment, personnel and written materials.

Adapted from Wilson et al (2008)

SERVQUAL has been subject to various criticisms regarding its validity and reliability (for detailed reviews see Buttle 1996, Grant 2003). When measuring service quality it is important to identify those attributes that are considered determinant, however for SERVQUAL this has proved problematical. For example,

Carman (1990) highlights the difficulty of using a single instrument across different industries. This variability requires additional research to reformulate the dimensions within different contexts. This research frequently follows a methodological paradigm formulated by Churchill (1979) for the development of marketing measures. Smith (1999:110) summarises this process as one whereby:

the researcher must first specify the domain of the construct of interest and then generate a sample of items for its measurement. Next is a process of data collection and purification of the measure based on factor analysis and the calculation of coefficient alpha. A second stage of data collection is followed by an assessment of the reliability and validity of the construct.

A further criticism of SERVQUAL is that there is ambiguity about precisely what constitutes an “expectation” and whether consumers form expectations that are stable and accessible for accurate measurement (Cronin and Taylor 1992, Teas 1993, Buttle 1996). Expectations can exist along several levels and consumers may recognise and use multiple levels of expectations or standards (Prakash and Lounsbury 1984; Tse and Wilton 1988, Sirgy 1984, Oliver 1996). It has also been argued that consumer expectations of a product or service are not formed pre-trial (Zeithaml et al 1993) but are in fact “experience-based norms” formed during consumption and post-trial (Kahneman and Miller 1986). This in turn raises questions of whether expectations remain constant or change over time (Buttle 1996). It has been suggested that as consumer experience with a service grows the expectations that are held become more explicit, realistic and focused (Gronroos 1993).

Drawing on the debate about the variability of expectations, Cronin and Taylor (1992) argue service quality should not be measured using a difference score across two item-batteries. Their findings are based on evidence that a perception only model explains the greatest variation in service quality evaluation for consumers who are familiar with a service context and they propose a performance-only scale SERVPERF. However other researchers have argued that discontinuing the use of expectation reduces the richness of diagnostic information and eliminates an important benchmark for service providers (Pitt et al 1997, Grant 2003). In addition a perception-only approach fails to account for those with no prior experience of a

service or those who choose not to proceed with a service encounter after a preliminary evaluation.

Therefore it is important to recognise the different levels of expectation and to acknowledge the dynamic nature of predictive expectation within the ED Perspective. Expectations have been defined both as predictive, when they are an anticipation of future outcomes (Tolman 1932), and as normative, when they are a desire for the occurrence of future outcomes (Parasuraman et al 1988). Satisfaction research uses predictive expectation as a referent whilst within the service quality literature the focus is on normative expectations as desires or wants of customers, i.e. what a service provider “should” rather than “will” offer (Parasuraman et al 1988, Oliver 1996). In an exploration of expectation variability, Gwynne et al (2000) found that normative “should” expectations remain unchanged but that predictive “will” expectations become more realistic with experience. Furthermore, Van Dyke et al (1997) recommend that both predictive and normative expectations should be measured separately in order to increase understanding of the impact of expectation on service quality evaluation.

The second stream of service quality research is recognised as the Nordic School (Wilson et al 2008). The Nordic School propose two dimensions of service quality: functional quality (the process of service delivery) and technical quality (the outcome of the service) that combine to form overall perceived service quality (Gronroos 1984, 1988). By distinguishing between how the service is delivered and what kind of service is delivered this model gives equal importance to both the interaction between the service provider and the final service outcome (Wilson et al 2008). It is of interest to compare the concept of service quality to the concept of end-user satisfaction found within the IS literature.

Within IS research, computing end-user satisfaction is defined as “the affective attitude towards a specific computer application by someone who interacts with the application directly” (Doll and Torkzadeh 1988: 261). In itself, end-user satisfaction has proved a weak predictor of actual system usage (Davis et al 1989, Goodhue 1988, Hartwick and Barki 1994, Melone 1990). One explanation offered is that the

individual who interacts with the information system might not be the individual who uses the final output (DeLone and McLean 1992). Thus an additional measure of “information satisfaction” has been developed (Bailey and Pearson 1983, Ives et al 1983, Jenkins and Ricketts 1985, Baroudi and Orlikowski 1988 DeLone and McLean 1992, Seddon 1997).

Parallels can be drawn with the two-factor approach to service quality proposed by the Nordic school and the IS approach of measuring both information satisfaction and system satisfaction. For example, system quality can be compared to functional quality (i.e. how the service is delivered) and information quality to technical quality (the outcome of the service). It should also be noted that latterly within the IS discipline there has been a recognition that the support provided by an IT department is also a service element. Thus a third scale to measure service quality drawing on the marketing discipline and in particular the SERVQUAL model, has been proposed (Kettinger and Lee 1995, Li 1997, Delone and McLean 2003).

2.19.3 Summary

The ED Perspective focuses on the link between satisfaction and service quality in explaining Internet adoption. It utilises a “gap” model that focuses on the differences between consumer expectations prior to adoption and their perceptions after adoption. Where perceptions exceed expectation a consumer may form a satisfaction or service quality judgement regarding use. Expectations can function at different levels as either a prediction of a particular outcome or a desire to see a particular outcome, thus since expectations act a referent it is important to acknowledge these differences when conducting research within this perspective.

There are two main streams of service quality research within the marketing literature; SERVQUAL and the Nordic School. Both approaches seek to identify the attributes that determine a positive evaluation in terms of service quality but differ in their conceptualisation of the dimensions of the construct. IS research conducted within an organisational context has developed measures to measure the response of both the operator of an IS system and the response of the manager who utilises the information and thus has developed measures of system and information quality.

This review will now provide an overview of how service quality measures have been applied to Internet adoption.

2.20 Application of the ED Perspective to Internet Research

Marketing and IS researchers have suggested that both satisfaction and service quality constructs may be important determinants of web site use (Rowley 2001) and in particular continued use (Bhattacharjee 2001). It is argued that a consumer's quality assessment of a company web site plays a central role in the formation of attitude towards the organisation, the decision to transact and also continued use of the Internet (Evans and Wurster 1999; Nielson 1999, Reichheld and Schefter 2000). In addition empirical research has shown that overall satisfaction with web site performance has a positive effect on intention to continue use (for example, van Riel et al 2001). Loiacono et al (2007: 51) note that there has been considerable practitioner interest and that:

Businesses are eager to develop means for measuring and analysing consumer perceptions of web site designs.

2.20.1 Application of SERVQUAL

There has been an active stream of research into web site quality that has drawn on the SERVQUAL research design (for recent reviews see, Bauer et al 2006, Halaris et al 2007). Studies have either revised the original scale items for the online context (for example, Kuo, 2003; Webb and Webb, 2004), used an instrument developed by Zeithaml et al (2000) for the online context (for example, Siu and Mou, 2002) or have followed Churchill's methodology (1979) to generate a new scale items in an approach informed by the ServQual approach (for example, Barnes and Vidgen, 2000; Loiacono et al, 2002; Wolfenbarger and Gilly, 2003). Thus there have been several attempts to produce a rigorous and comprehensive method that can capture information on consumer response to a particular web site rather than on Internet use in general (Loiacono et al 2007).

Huang and Christopher (2003) argue that web site quality studies do not make sufficient distinctions between the goals of consumer behaviour. For example

Parasuraman et al (2005) criticise Wolfinbarger and Gilly's (2003) scale E-Tail-Q for its failure to measure post-purchase response. McKinney et al (2002: 297) argue that there should be recognition that web site judgements may be formed as a result of experiences at:

various purchasing stages: (a) need arousal, (b) information search, (c) alternatives evaluation, (d) purchase decision and (e) post-purchase behaviour.

However this recognition is not found in practice. For example, in a content analysis of web site features, Huang and Christopher (2003) find that whilst information search, decision and transaction phases are well supported only 38% of web sites have features to support post-purchase behaviour. This absence of post-purchase consumer support is of concern; since it is argued that customer support is one of the key determinants of online retail success (Rust and Lemon 2001, Jun et al 2004).

Parasuraman et al (2005) recognise that consumer evaluation of a web site might differ according to transaction stage and develop an instrument to help inform web site design. They introduce two scales to measure web site quality. First, E-S-Qual that captures consumer evaluation of the online shopping experience. Second, E-RecS-Qual that focuses on consumer evaluation of post-purchase service, for example the resolution of problems with either the purchase outcome or the transaction process. However, this research does not take account of pre-purchase activity by which a consumer might infer quality outcomes prior to web site use (Bauer et al 2006).

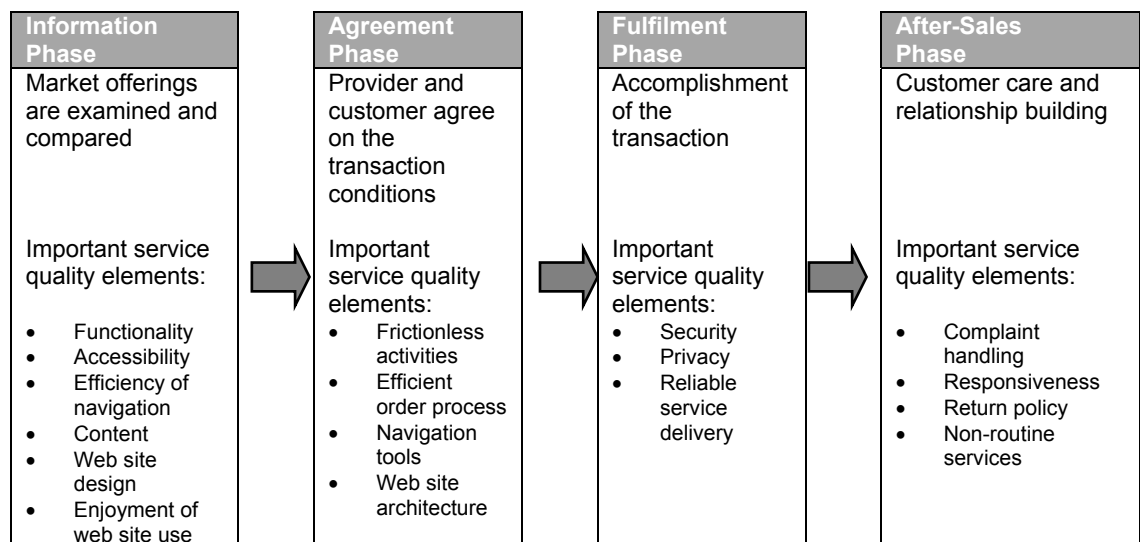
Bauer et al (2006) detail a process-based framework that takes into account pre-purchase and post-purchase behaviour to inform their research into e-service quality (Figure 2.16). They argue that web site quality elements may vary in importance according to four transaction phase: information search, agreement, fulfilment and after-sales service. They note that:

While the first two stages are dominated by information gathering and processing, the third stage deals with the exchange of goods and services. Finally, the fourth stage addresses the importance of relationship related activities (p 868).

Bauer et al (2006) posit that ease of use may be valued in the information gathering stages, that security features and reliability may be valued in the fulfilment stages and communication tools may be valued in the agreement and after-sales phases.

Despite this richer diagnostic approach, Bauer et al (2006) do not compare measures across stages but develop one scale to holistically measure service quality (e-Trans-Qual). Thus this research is limited on two counts. First, by not providing empirical support to prior conjecture by the authors on task-related differences in assessment of web site features. Second, by assuming that consumers will use a web site at each transaction stage. This assumption is evidenced by the selection of research participants on the basis that they had conducted and completed an online shopping transaction. Consumers who shop completely online are one sub-group of the population of Internet users and research has shown that consumers use online and offline channels in combination with each other (Schoenbachler and Gordon 2002).

Figure 2.16 E-Service at Each Transaction Phase



Source: Bauer et al (2006: 869)

Exploratory research indicates that in terms of the provision of web site attributes “more” provision may not be perceived by customers as “better” and that an ideal point of provision exists for each transaction stage. For example, Zeithaml et al (2002) find that “there seems to be a greater degree of consumer trade-offs and hence curvilinearity” in online service quality dimensions compared to offline measures.

For example they find that at the time of placing an order consumers valued e-mail communication but that, prior to delivery, “there came a point at which too much e-mail was being sent” (p 368). This is an indication that the presence of an attribute varies according to transaction stage. There is also evidence that “ideal” provision varies according to customer. For example, whilst some consumers valued personalisation in the form of large quantities of information and colourful graphics other customers preferred simplicity in information and presentation. The reason underpinning this preference was a desire for task simplicity and efficiency since these features reduced download speed and “too much information became confusing” (p 368).

In addition to the transaction stage, a further distinction can be made as to whether the consumer is evaluating the online service outcome or the web site experience. This distinction was introduced when discussing the application of TAM in Section 2.16 in terms of intrinsic and extrinsic tasks (Gefen and Straub 2000). Several researchers have noted this additional layer of complexity. For example, Prescott and Van Slyke (1997:120) identify that the Internet operates both as a product and a process depending on its intended use. They urge that “any diffusion-based study of the Internet must explicitly draw a distinction between product and process orientation”. Saeed et al (2003:19) in a meta-analysis of 42 studies into online consumer behaviour conclude that:

A distinction needs to be made between regarding who is providing the service. If the service is provided by the web site, the elements of service quality such as tangibility, reliability and responsiveness will tend to overlap with system quality. However if the vendor provides the service, service quality should emerge as a distinct factor. This may be one of the reasons for contradictory findings in the studies of SERVQUAL. Consequently we recommend that researchers make a clear distinction regarding the context and apply SERVQUAL with caution.

These findings indicate that a distinction should be made between the e-technology, which underpins the process, and the outcome of using that technology in terms of e-support or e-product.

There are criticisms that Internet research has not produced one widely recognised, reliable and well-validated web site evaluation instrument (Loiacono et al 2007). For example, Finn and Kayande (2003) in an early analysis of 27 web site evaluation studies found 15 different dimensions overall and 40 different items. One explanation might be the variability of expectation. For example, early studies into web site quality found that consumer expectations of online service quality were not as well formed as those of traditional service quality (Zeithaml et al 2000). Mick and Fournier (1995: 1) also argue that, in the context of technology consumption, “an individual’s pre-consumption standards are often weak, inaccurate or subject to change”. This indicates a need to undertake research into consumer expectation as experience and knowledge of the Internet develops.

Against this criticism it is possible to contend that the development of a single measure of web site quality is not achievable and at odds with the ontology and epistemology of service quality research. For example Grant (2003) argues that service quality evaluation is a context dependent phenomenon for which law-like generalisation is not attainable. He states that service quality research should be inductive-deductive and recognise and be sensitive to context. However, web site quality research has shown limited sensitivity to the different transaction stage contexts (Yang and Jun 2002). Thus there is a need for research to explore and gain insight into how consumer expectation and evaluation of web site attributes vary according to transaction task and according to consumer.

2.20.2 The Nordic School Approach

The two-factor Nordic School model does make the critical distinction between process and outcome. For example, in a theoretical paper Cox and Dale (2001) relate the Nordic School model to web site design. They suggest that for functional quality “the meaning is the same and is relevant to e-commerce in so far as the layout and accessibility of a web site is concerned” (p124).

Van Riel et al (2001) focus on the impact of several elements on overall satisfaction and perceived value: system quality (which is termed the user interface), core (e-product) and supplementary services (e-support). They survey a limited sample of 52

users of an online medical information portal. They find that system quality has only a small effect on satisfaction and no direct effect on perceived value. However they argue for possible interaction effects between system quality and service outcomes and that system quality might only exert an influence when it is not present. Given the exploratory nature of their work they recommend that “further research is needed on how the user interface influences customer evaluations in various situations” (p 373).

McKinney et al (2002) develop scales of information quality and service quality to specifically measure web site satisfaction when searching for information. The research draws on approaches that distinguish between information aspects as determinants to satisfaction both within the IS literature (DeLone and McLean 1992) and within the marketing literature (Spreng et al 1996). They find that there are distinct dimensions of e-support in terms of information quality (“understandability”, “reliability” and “usefulness”), and three dimensions of process or system quality (“access”, “usability” and “navigation”). One weakness of this study is that there is no comparison to see whether these evaluative dimensions differ at different transaction phases.

In general, there has been limited application of a “process and outcome” approach to web site evaluation (Lin 2007), despite the degree of congruency between the Nordic School approach and IS conceptualisation of system and information quality. Thus there is a need for research that examines the extent to which consumer requirements for information provision (outcome) and system performance (process) vary according to transaction stage activity.

2.20.3 Summary

This discussion of the application of the ED Perspective within Internet research has shown that there has been an active stream of research into web site quality that has drawn on the SERVQUAL research design. Research within this perspective has attempted to address practitioner needs for a tool with which to analyse consumer perceptions of web site designs. There have been several attempts at designing a suitable scale to measure web site quality. However these studies have been

criticised by their failure to take into account that a web site can be used for variety of activities at different stages of a transaction.

In addition, there has been a failure to fully recognise the role of online customer support and the degree to which the online task can be considered intrinsic (i.e. the need is fully satisfied using the web site) or extrinsic (i.e. the need is only partly met through web site use). Furthermore, there has been a failure to differentiate between the quality outcomes associated with the technical functionality of a web site and the quality outcomes of the service process which it enables. The Nordic School approach to service quality does recognise that process and outcome are distinct but this approach has not been utilised widely in Internet research.

2.21 Application of the ED Perspective to Online Banking

This review critically evaluates a range of online banking research located within the ED Perspective. ED informed research explores the link between the presence of web site features, evaluations of web site quality and consumer satisfaction. This subsection begins by discussing the range of research in this area. It then proceeds to analyse three research streams: studies that have examined bank web site consumer satisfaction, those that have followed a SERVQUAL informed approach and those that have drawn upon the Nordic School. Finally there is discussion of the extent to which online banking research has considered different transaction phases.

2.21.1 Extent of Research

The majority of studies focus on web site quality (69%, n=25) compared to 19% (n=7) that examine consumer satisfaction. Four studies use the ED Perspective to account for other affective responses; primarily how the presence or absence of certain web site attributes result in an evaluation of trust (Mukherjee and Nath 2003, Kassim and Abudulla 2006, Johnson et al 2008). In terms of service quality measurement, the majority of studies (88% n=22) are informed by SERVQUAL. Only three studies draw on a two-factor model of technical and functional quality (Broderick and Vachirapornpuk 2002, Lassar and Dandapani 2003, Heinonen 2007).

The volume of studies focusing on service quality evaluation is consistent with an emphasis on web site quality as an important component of business success within Internet research in general (Yang 2001, Santos 2003). With regards to the banking sector, Chou and Chou (2000: 55) argue that “banks must provide high-quality systems as an important strategic objective”. However information to assist practitioners remains limited. For example, Ibrahim et al (2006: 478) note that:

The assessment of customers’ electronic service quality perceptions has, thus, become increasingly important and strategic for both service-orientated organisations and their manufacturing counterparts. Yet, as the literature suggests, research on customers’ assessments of electronic service quality (e-SQ) is still at an early stage.

2.21.2 Satisfaction

Within the satisfaction research stream there are several attempts to identify the web site attributes that contribute to an overall evaluation of satisfaction. For example, Polatoglu and Ekin (2001) conduct exploratory research amongst Internet users who are also customers of a particular bank drawing on both ED and DoI Perspectives. They asked respondents to rate their satisfaction with various attributes of the online banking service provided by this bank. Factor analysis was used to reduce 11 variables into 3 factors (reliability, access and savings) that explained 72.4% of the total variance in overall satisfaction.

Within the satisfaction studies identified there are indications that a measure of overall satisfaction fails to capture the dual nature of e-service. For example, Kim (2005: 53) notes that an “e-customer has two interlinked and overlapping roles – that of computer user and that of customer” thus “it is possible that satisfaction with the IS is unrelated to satisfaction with the product”. Despite this assertion Kim (2005) takes the position that these evaluations interact to produce an overall satisfaction level. He finds that satisfaction explains 52% of repurchase intention but only 12% of actual repurchase behaviour and concludes that there is still work to be done in this area.

Research shows that satisfaction with the transaction medium exerts a distinct influence on online banking adoption. For example, Devlin and Yeung (2003) show

that satisfaction with traditional banking channels can influence consumer decisions to consider online transacting. They find that 19% of the variance in consumer interest is explained by a model of demographic variables plus satisfaction with “in-branch service”, “ATM use”, “economic benefits i.e. interest rates and charges”, and “remote service use”. In-branch service satisfaction has an inverse relationship with interest in banking online whilst ATM and remote-service satisfaction have positive relationships with interest in online banking. This may indicate that consumers who are satisfied with remote transaction services are inferring that similar benefits can be gained from Internet use. Thus, in this instance, channel satisfaction is a distinct influence on behavioural intention contrary to the position taken by Kim (2005) that satisfaction with channel and service operate holistically.

Research has focused on how satisfaction explains continued rather than initial adoption. For example, Bhattacharjee (2001) conducts a study of the influence of satisfaction on continuing behaviour amongst existing online bank customers. He measures overall satisfaction and does not acknowledge possible differences in the influence of service satisfaction and channel satisfaction. In this study TAM is used to formulate antecedents to overall satisfaction. Thus satisfaction is conceptualised as being a result of “perceived usefulness” in terms of improved financial management.

A structural equation model is tested whereby 33% of the variance in satisfaction is explained by both expectation confirmation and “perceived usefulness”. Satisfaction and “perceived usefulness” also explains 41% of the variance in intention to continue use. Whilst the model developed by Bhattacharjee (2001) is parsimonious and the research rigorous the predictive efficiency is modest compared to other studies (Table 2.5). In addition, the use of a limited number of items and the generality of the statements offer limited insight into the specific areas of online banking practice that require improvement.

It is disappointing to find several studies within the satisfaction stream that whilst exhibiting high predictive efficiency are poorly implemented. For example, Awamleh and Fernandes (2005) use information gathered from 49 online bankers to

analyse satisfaction with 12 web site attributes. Through factor analysis the 12 attributes are reduced to 3 dimensions of overall satisfaction (independence, convenience and security). The authors argue that the results of this study are consistent with other online studies and find that the factor scores predict 70% of the variance in overall satisfaction. However the sample is insufficient for the statistical analysis undertaken indicating a need for additional research.

Table 2.5 Selected Studies on Online Banking Satisfaction

Date	Author	Design	Variables	Predictive Efficiency
2001	Bhattacharjee	Convenience 122 Bank Customers USA	PU Confirmation Satisfaction	$R^2 = .33$ Satisfaction $R^2 = .41$ Intention to continue use
2005	Kim	Intercept – Web links 465 Internet Shoppers and Students Korea	Ten dimensions - Delivery and after- sales service - Purchase result and price attractiveness - Product information - Customer service - Site design - Process convenience - Product attractiveness - Payment method - Site information - Log-on convenience	$R^2 = .59$ satisfaction $R^2 = .52$ repurchase intention $R^2 = .12$ repurchase behaviour
2005	Awamleh & Fernandes	Convenience 49 Online bankers UAE	Three dimensions - Independence - Convenience - Security	$R^2 = .70$ Satisfaction
2008	Liao & Cheung	Not Given 182 Online Bankers Hong Kong	PU, EoU + four dimensions - Reliability, - Security, - Responsiveness, - Continuous Improvement	$R^2 = .78$ Satisfaction

Abbreviations: PU= “perceived usefulness”, EoU = “Ease of Use”.

Eriksson and Nilsson (2007) explore the influences on continued use by drawing on TAM constructs to examine how “perceived usefulness” and multi-channel satisfaction combine to explain frequency of online bill payment. However there are areas where the research design is deficient: only a limited number of indicators are used to operationalise the constructs, the content validity is debatable and the predictive efficiency of the model is not reported. For example multi-channel

satisfaction is measured using a two-item scale that focuses on institutional level antecedents (overall satisfaction with bank and satisfaction with range of banking services offered by bank) and does not capture information on perceptions of online banking. Eriksson and Nilsson (2007) find that multi-channel satisfaction has a negative relationship with online bill payment whilst “perceived usefulness” has a positive relationship. Given the nature of the variables measuring multi-channel satisfaction, the results are consistent with the conclusion of Devlin and Yeung (2003). This was that satisfaction with traditional transaction channels has a negative influence on online banking adoption.

Whilst researchers argue that quality perceptions are an antecedent of customer satisfaction (Giese and Cote 2000), only one study by Liao and Cheung (2008) attempts to examine the relationship between web site quality and online banking satisfaction. They find that “perceived ease of use” and “perceived usefulness” combined with web site quality dimensions of: reliability, security, responsiveness and continuous improvement explain 78% of variance in consumer satisfaction.

In conclusion, these studies whilst providing an indication of the value that consumers place on a range of web site qualities have several limitations. First there is no attempt to distinguish between service satisfaction and channel satisfaction even though it is acknowledged that a distinction might exist (Kim 2005). Several researchers touch obliquely on the dual nature of online banking through examination of process satisfaction (remote, ATM, in-branch), outcome satisfaction (price reduction) and provider satisfaction (Devlin and Yeung 2003, Eriksson and Nilsson 2007), but findings remain fragmented. In addition, studies tend to use post-hoc perception-only measures from current users of online banking. Thus this research into online banking satisfaction fails to generate detailed diagnostic information on the level of consumer expectation or to capture information from those who have either decided against adoption or have discontinued use.

2.21.3 SERVQUAL

SERVQUAL informed research focuses on consumer expectations of what online banking should deliver and some studies also compare these expectations with

perceptions of what is provided. Gerrard et al (2006: 161) outline how research into online banking adoption has “some common themes” despite the “different investigative thrusts” that result in lack of overall consensus. This sub-section aims to identify areas of communality amongst SERVQUAL-informed studies.

A content analysis of reported dimensions of online banking quality was undertaken in four stages. First studies were selected that conducted empirical research within the online banking context to generate web site quality scale items, thus studies that utilised a published scale with no adaptation to the online banking context were not analysed. Where researchers reported different interpretations of the same data in different journal articles only one study was selected for analysis (i.e. Joseph et al 2005a, Joseph et al 2005b). In addition studies were excluded where there was no information on the items within a quality sub-scale (i.e. Siu et al 2004). This selection process resulted in a pool of 14 studies (Appendix II).

Second, for each study, the dimension labels were listed and these labels were then grouped according to common themes in a mindmap (Appendix III). A study might be listed several times within the mindmap according to the number of quality dimensions it reported. Third, the labels were sorted as to whether the individual items within each dimension primarily related to web site attributes, service characteristics or provider attributes. It should be noted that within the empirical research these divisions generally are not followed, despite arguments that customer service quality, online systems quality and banking service product quality are key to successful online banking (Jun and Cai 2001). It is felt that this process of separating out the different elements of web site quality facilitates an overview of the research stream.

The fourth stage was an identification of the item statement with the strongest association with each label (i.e. the highest factor loading). If this item statement was inconsistent with items from other studies then the label for that study was reassigned to a different branch. Thus the analysis was “mindful that the respective researchers have chosen their own labels for each of the factors they have developed [and that]

this can result in different labels being given to similar factors” (Gerrard et al 2006: 161).

The results of this analysis highlight areas of agreement in online banking quality research. Tables 2.6, 2.7 and 2.8 provide an overview of quality attributes that are shared by more than two studies. In addition to the attribute label the table contains illustrative items for each attribute and lists studies that exhibit commonality. The following sub-sections discuss the findings for web site attributes, service characteristics and provider attributes.

2.21.3.1 Web Site Attributes

Web site attributes are identified as the nature of the technology that is used to provide online banking and the characteristics of the bank web site in terms of content and design. There are six areas of commonality: accessibility, reliability, ease of use, security, aesthetics and information quality (Table 2.6). Several studies find that consumers expect web sites to be accessible, the item most frequently used to operationalise this construct is the speed or absence of delay in establishing a connection to the bank web site. Closely aligned with “accessibility” is “reliability”. Reliability is an expectation that online banking will be available for use continually with no interruption due to technical failure.

Other areas of commonality relate to web site design and content. In terms of design two frequently identified quality dimensions are “ease of use” and “aesthetics”. Various studies examine consumer expectations that the web site will be easy to use. This construct is operationalised as the absence of consumer effort, with a particular focus on logging in procedures and navigation. A second group of studies focus on aspects that might make a banking web site aesthetically pleasant to use. Measures of this construct capture expectations of the presence of colour, graphics and print characteristics.

Researchers also frequently identify web site attributes designed to ensure security. Items within this dimension have measured expectations of provider action to ensure security and to provide of information about web site security. In addition items have

measured the requirements for consumers to participate in security processes such as setting up a username and password. In terms of web site content some researchers examine expectations of information provision. Items include expectations of the range, relevance and currency of information.

Table 2.6 Overview of Web Site Attributes

Web site Attribute	Illustrative Items	Studies
Accessibility	<ul style="list-style-type: none"> • Efficient/no waiting time • The speed of login of your account is fast • I can log into my account at Bank X every time and Web pages are downloaded quickly 	Joseph et al (1999), Jun and Cai (2001), Siu and Mou (2002), Jayawardhena (2004), Waite and Harrison (2004), Waite (2006), Sohail and Shaikh (2008)
Reliability	<ul style="list-style-type: none"> • Always available • Bank Xs service is truly 24 x7, there are no occasions when the web site is inaccessible • Online banking services are reliable 	Jun and Cai (2001), Jayawardhena (2004), Joseph et al (2005b),
Ease of Use	<ul style="list-style-type: none"> • Easy Login/navigation • Clear easy to follow instructions • Using the company's web site requires a lot of effort 	Jun and Cai (2001), Yang et al (2004), Jayawardhena (2004), Bauer et al (2005), Joseph et al (2005a), Waite (2006), Sohail and Shaikh (2008)
Security	<ul style="list-style-type: none"> • Has security protection/guarantee • Privacy/security information • Authorised access allowed only 	Jun and Cai (2001), Siu and Mou (2002), Waite and Harrison (2004), Maenpaa (2006), Waite (2006), Sohail and Shaikh (2008)
Aesthetics	<ul style="list-style-type: none"> • Use of colour in site design/ appropriate use of animation • The bank's web site does not have fine print that is difficult to read and hard to find 	Jun and Cai (2001), Siu and Mou (2002), Waite and Harrison (2004), Bauer et al (2005), Waite (2006).
Information Quality	<ul style="list-style-type: none"> • Information on products and services online • Site has daily updates • Comprehensible product information • Online help/ tutorials 	Jun and Cai (2001), Waite and Harrison (2004), Bauer et al (2005) Maenpaa (2006),

2.21.3.2 Service Characteristics

Service characteristics are identified as the actions taken by the financial institution whether online or offline to provide a banking service. Accuracy and responsiveness

are two areas of commonality. Responsiveness is comprised of three distinct sub-groups, responsiveness to individual needs, to complaints and to enquiry (Table 2.7).

Several researchers find that consumers expect that online banking services should accurately record information and enact instructions. Responsiveness is responding to individual needs, complaints and enquiry. Studies have examined consumer expectations that online banks should be responsive through either personalisation of service to the individual or by showing increased understanding. Items used to operationalise these quality dimensions indicate that there is a desire for friendliness, speed, interaction (in terms of a live person) and availability. Siu and Mou (2002) examined this construct in terms of the communication tools that might be present on a web site for example “The bank’s web site provides a confirmation of the service ordered” and thus there is some overlap with the technical web site attributes.

Table 2.7 Overview of Service Characteristics

Service Characteristic		Example Items	Study
Accuracy		<ul style="list-style-type: none"> • Accuracy of personal information • Be capable of performing all transactions accurately • Provide accurate records of all transactions that have taken place 	Joseph et al (1999), Jun and Cai (2001), Joseph and Stone (2003), Yang et al (2004), Bauer et al (2005), Joseph et al (2005b)
Responsiveness	Responsive to individual needs	<ul style="list-style-type: none"> • Gives the customer personal attention • Bank X understand the needs of their customers 	Jun and Cai (2001), Jayawardhena (2004), Joseph et al (2005b), Ibrahim et al (2006)
	Responsive to complaints	<ul style="list-style-type: none"> • Friendly manner when addressing complaints/Gives a clear answer • Separate device of handling complaints 	Joseph et al (1999), Siu and Mou (2002), Joseph and Stone (2003), Bauer et al (2005), Sohail and Shaikh (2008).
	Responsive to enquiry	<ul style="list-style-type: none"> • You are able to talk to a “live” person using a telephone number • Available for help • I receive prompt responses to my requests by e-mail or other means 	Joseph et al (1999), Jun and Cai (2001), Siu and Mou (2002), Devlin and Yeung (2003), Yang et al (2004), Ibrahim et al (2006)

2.21.3.3 Provider Attributes

Provider attributes are identified as the characteristics of the banking organisation. Areas of commonality are found in terms of: product range, the provision of offline facilities, the trustworthiness of the organisation and the competence of the staff

(Table 2.8). In terms of product range researchers have identified that consumers expect product choice and competitiveness. In particular there is an indication that consumers place value on the ability to undertake price comparison and even expect that competing products should be offered and that there should be evidence of external collaboration between the bank and others. It is interesting to note that low pricing of products is not identified as a determinant of web site quality. This is consistent with findings within the satisfaction stream of research. For example, Devlin and Yeung (2003) find that economic factors are non-significant within their model. Thus they conclude that the “relative advantage” of online banking transactions lies not with economic gain.

Table 2.8 Overview of Provider Attributes

Provider Attributes	Example Items	Study
Product Range	<ul style="list-style-type: none"> • All my service needs are included in the menu options • Diversity and breadth of service range • Choice of competitive products • Loans through other providers • External Collaboration apparent 	Jun and Cai (2001), Yang et al (2004), White and Nteli (2004), Bauer et al (2005), Ibrahim et al (2006), Maenpaa (2006)
Trustworthy	<ul style="list-style-type: none"> • Confidence in the bank’s service • Bank will not misuse my personal information • Shows discretion 	Jun and Cai (2001), Siu and Mou (2002), Joseph and Stone (2003), Jayawardhena (2004), Yang et al (2004), White and Nteli (2004), Bauer et al (2005).
Competency	<ul style="list-style-type: none"> • The company employees have the knowledge to answer my questions • Competence in customer care 	Jun and Cai (2001), Yang et al (2004), Bauer et al (2005)
Offline Facilities	<ul style="list-style-type: none"> • Provide a customer friendly environment whilst in waiting in queue • Has special terminals in bank branches 	Joseph et al (1999), Joseph et al (2005a), Waite and Harrison (2004), Ibrahim et al (2006),

A further two areas of agreement relate to the trustworthiness of the organisation and the competency of the staff. In terms of trustworthiness, research encompasses a range of items including confidence and credibility in the institution and trust that personal information will be kept safe and not used for inappropriate purposes such as direct selling. The competency of employees relates to the skill and knowledge of staff employed by the bank and thus whilst competency is necessary to deliver

service characteristics such as accuracy and responsiveness it is viewed as a characteristic of the service provider and not of the service itself.

Finally, there is a group of studies that identify that offline facilities are one indication of online banking quality. The development of this strand can be traced to an early study by Joseph et al (1999) from which items have been used in three subsequent studies (Waite and Harrison 2004, Joseph et al 2005a, Ibrahim et al 2006). Items include the provision of friendly environment whilst waiting to use the technology and also the provision of special terminals in branch locations. It can be questioned to what extent these attributes are relevant to an online banking experience and particularly for those banks that only operate via the Internet and thus have no branch presence.

2.21.3.4 Discussion

It is possible to identify instances where provider attributes are dimensions of service quality in an offline context. The emphasis on product range characteristics is consistent with other research into dimensions of banking service quality. For example, Bahia and Nantel (2000: 91) identify that a “complete gamut of services” is a component of banking service quality. Kaynak and Harcar (2005) identify that extra services offered by the bank are a factor in consumer bank choice. Gerrard and Cunningham (2001) find that the variety and range of services contribute towards positive service quality evaluations by banking customers.

Similarly, the nature of bank employees and confidence in the institution are two factors identified by Kaynak and Harcar (2005) as influencing bank choice in general. Bahia and Nantel (2000) have items relating to “confidence” and “well-trained personnel” in their banking service quality scale. Gerrard and Cunningham (2001) identify that staff competency contributes towards service quality of perceptions of bank customers. Thus trust and competence areas that have emerged as common across online banking quality and offline banking studies. This finding supports the assertion that in terms of informing online practice it is important to focus on those attributes that are distinct to the medium. This indicates that there is a distinction to be made between those elements of online banking quality that are

unique to the online service context and some elements that are common across all distribution channels.

In addition, it is of interest to evaluate the findings regarding web site attributes and service characteristics in the context of service quality. “Reliability” is a dimension found within SERVQUAL (Parasuraman et al 1998, 1991). However, Zeithaml et al (2002:372) argue that whilst research shows that “reliability” is an important dimension of traditional service quality within the online context “reliability consists of attributes that are different from those for SQ [traditional service quality]”.

In an attempt to re-formulate SERVQUAL for the online context the researchers developed E-S-Qual to measure online service quality for retailing web sites (Zeithaml et al 2000, 2002, Parasuraman et al 2005). Drawing on this research Zeithaml et al (2000) define “reliability” as:

the correct technical functioning of the site and the accuracy of the service promises (having items in stock, delivering what is ordered, delivering when promised) billing, and product information. (Parasuraman et al 2005: 219).

However in later research Parasuraman et al (2005) distinguish between “system availability” which is the correct technical functioning of the site and “fulfilment” which is the extent to which promises about delivery and item availability are fulfilled. It is with system availability that the “reliability” dimension of online banking research is most closely aligned. Similarly Parasuraman et al (2005: 220) identify “efficiency” as a dimension of E-S-QUAL and define this as “the ease and speed of accessing and using the site”, this dimension is similar to the “accessibility” dimension found within online banking studies.

Table 2.9 compares E-S-Qual dimensions with the areas of commonality that have been identified within the online banking literature. E-S-Qual is a measure of core service quality in contrast E-RecS-Qual is applied only when a customer experiences problems (Kim et al 2006). The dimensions correspond in most areas apart from the dimension of compensation that mainly applies to the context of a retailing exchange. Thus there are a range of elements that are shared across online contexts.

Table 2.9 E-S-Qual Dimensions and Online Banking Quality Dimensions

Dimension		Definition	Online Banking	
			Web site	Service
E-S-Qual	Efficiency	The ease and speed of accessing and using the site	Accessibility	
	Fulfilment	The extent to which the site's promises about order delivery and item availability are fulfilled		Accuracy
	System Availability	The correct technical functioning of the site	Reliability	
	Privacy	The degree to which the site is safe and protects customer information	Security	
E-RecS-Qual	Responsiveness	Effective handling of problems and returns through the site		Responsive to complaints
	Compensation	The degree to which the site compensates customers for problems		
	Contact	The availability of assistance through telephone or online representatives		Responsive to enquiry

Adapted from Parasuraman et al (2005).

2.21.4 The Nordic School

There are only three studies that utilise the Nordic school model of examining process (functional quality) and service outcomes (technical quality) as distinct constructs. However, in the wider banking literature there is some evidence of approaches that distinguish between the service that is being delivered, the facilities that are used for delivery and the providing organisation. For example, Jamal and Naser (2002: 146) argue that a retail banking service has a core process or outcome (e.g. reliability), a relational or process aspect (e.g. responsiveness) and a tangible component (e.g. bank facilities).

Broderick and Vachirapornpuk (2002) examine how consumer expectation and participation in the service setting and the service encounter result in service quality perceptions. They argue the functional quality of the service setting is used by web site visitors as tangible evidence of the technical quality of the service being provided. Since "the virtual service setting facilitates performance and communicates evidence to the customers about the service" (p 329). This is a qualitative study that uses data from comments posted on a bulletin board by online banking users.

Broderick and Vachirapornpuk (2002) find that key service-setting components are speed to download, navigation and interactivity and that where these are not present then negative evaluations are made. These findings are consistent with research that draws on the SERVQUAL paradigm that identifies that consumers value accessibility and ease of use.

Lassar and Dandapani (2003) conduct a study that measures consumer perceptions of a bank web site across various task environments. They examine how technical and functional quality might vary between information seeking and account transaction tasks. They explore how media perceptions of social presence, communication effectiveness and the communications interface influence consumer evaluations of technical and functional quality using a student sample and an experimental design.

They find that social presence, namely the degree to which the medium conveys the psychological presence of the message sender, varies according to task condition. For an information seeking task “social presence” is positively and significantly related to technical quality (the service outcome), whilst for a transaction task social presence is related to functional quality (the service process). This finding provides further support to the conceptualisation that certain online tasks such as information seeking are intrinsic to web site use and others, such as transacting are extrinsic (Gefen and Straub 2000) and that a more detailed approach to evaluating consumer perceptions of web site attributes is needed.

Heinonen (2007) uses a conceptual framework of four dimensions (temporal value, spatial value, technical value and functional value) to explore online banking service value rather than service quality. Service value is defined as “the consumer’s overall assessment of the utility of a product based on perceptions of what is received and what is given” and thus involves a trade-off between the broader concepts of “benefit and sacrifice” as opposed to quality and price (Heinonen 2007: 2). Therefore:

These intertwined service value dimensions represent the value of a specific service offering (what, technical value), created in a wanted way (how, technical value), and that is relevant in a specific time (when, temporal value) and location (where, spatial value). (p 40)

Heinonen (2007) reports the quantitative and qualitative analysis of interview data from two small convenience samples of Finnish bank customers. Findings indicate that for online bill payment greater value is placed on time and place of service delivery than technical and functional quality. However the author acknowledges several limitations in the research design and operationalisation of the research constructs. For example, the study focused on a routine task and it is possible that the research participants no longer conducted an extended evaluation of the benefit-sacrifice decisions that they make. Heinonen (2007) concludes that more detailed research is needed into technical and functional dimensions in different contexts.

2.21.5 Consideration of Task Context

Studies that have been conducted in web site quality and satisfaction have tended to focus on transaction (Lassar et al 2005: 183). Online banking incorporates a variety of distinct tasks such as viewing account details, modifying account details, transferring funds between accounts, authorising money to leave the account, purchasing additional products and even downloading financial data for use in financial planning software (Jayawardhena and Foley, 2000).

This review has shown that there are indications in the web site quality literature of transaction stage differences. However, few of the online banking studies explicitly state whether research participants were asked to consider a particular online task and few consider different transaction stages such as information seeking (Waite and Harrison 2004). One exception are Devlin and Yeung (2003) who asked participants to record their interest in undertaking banking transactions and thus are one of a few studies that specify the transaction stage that is under consideration.

Early research into the differing influence of web site attributes on online pre-purchase information search and purchase behaviour indicates that a task effect is present (Waite and Harrison, 2002, Lassar and Dandapani, 2003). For example, Yousafzai et al (2005) in an experimental study amongst post-graduate students find that web site quality is one of the strongest influences on consumer trust when undertaking an information search. They argue that:

Customers interacting with a web site for the first time make strong inferences about the attributes of the bank from what they experience on the site. Thus, first impressions of the web site are important to trust building. This also suggests that seeing something concrete like a well-designed web site allows the customer to draw stronger trustworthiness inferences about the bank (p 196).

However there is no comparison to indicate the influence of web site quality in the context of transaction risk.

There is a lack of research that compares the differences in web site evaluation across task conditions with only one study (Lassar and Dandapani 2003) being identified by the author. Lassar and Dandapani (2003) find that participants desired specific attributes for different task conditions. They note that current web site design is mostly “homogenous” and that “practitioners as well as academics do not completely understand the Internet as a medium through which consumers gather information and execute transactions”. This study is exploratory and limited in its generalisability due to an experimental design and use of a student sample. Therefore further research is needed to develop these issues with a more representative sample and based on actual behaviour.

It is argued that an acceptable fit between task requirements and technology functionality increases the likelihood of high levels of use and leads to better task outcomes (Benslimane et al 2003). Thus good “fit” between the technology being used and the task being attempted might lead to evaluations of satisfaction and quality. Goodhue and Thompson (1995) propose a model of Task Technology fit that is defined as:

the degree to which a technology assists an individual in performing his or her portfolio of tasks....It is the correspondence between task requirements, individual abilities and the functionality of the technology...As the gap between the requirements of a task and the functionalities of a technology widens, TTF is reduced (Goodhue and Thompson 1995:216-218).

In addition predictive expectation that a web site will facilitate task performance is considered an influence on adoption. For example, D’Ambra and Wilson (2004: 297) argue that:

the decision to use the Web is based on an individual's expectation that the Web may have some impact on the task, or that using the Web to solve an information-based task may be a satisfying experience. ...The Web is a technology for which use is optional: at the same time, usage is dependent upon user perceptions of the impact of the Web on the task

Finally, different task conditions might result in a technological paradox (Mick and Fournier 1998) where the provision of one web site attribute reduces the efficacy of another. For example, the provision security attributes might reduce accessibility. Namely logging into a secure connection might increase the time it takes to access the online banking service. Thus a secure web site might be considered an inaccessible web site. Equally a highly accessible web site that does not require a consumer to log on might be viewed as insecure and risky.

A second example is that consumers could perceive an aesthetically pleasing web site as being inaccessible and unreliable. For example the time needed to download graphics and other interactive features might reduce accessibility and if the customer does not have the necessary software to display web site graphics then the reliability of the web site might also be reduced. On the other hand a consumer might perceive a web site that is highly accessible and reliable due to limited aesthetic attributes as one that is not pleasurable to use.

As discussed in section 2.12.3 information search can be considered a divisible low-risk activity undertaken prior to full-adoption. In this context over-provision of security features might so reduce the accessibility of the web site that a consumer discontinues use. Similarly Lassar and Dandapani (2003) note that a transaction-orientated web site that is highly accessible but not rich in colour and design may be perceived as less effective by those seeking information.

2.21.6 Summary

This discussion of the application of the ED Perspective within online banking research began by evaluating the presence of the different research streams. It found that the majority of the studies focus on web site quality and that a SERVQUAL-informed approach dominated. Research into online banking satisfaction is fragmented and limited in its consideration of different responses to channel and

service. Web site quality research offers a more detailed approach and a four phase content analysis indicated that there are common themes according to web site attribute, service characteristics and provider attributes. Several of the provider and service characteristics are found within the wider research into banking service quality. Thus it is argued that a distinction can be made between dimensions of quality that are unique to the online service context and those that are found within all distribution channels. In a comparison between online banking quality and the E-S-Qual scale indicates that there are shared elements that are distinct to the distribution medium.

In a discussion of task context and attribute provision it was proposed that the simultaneous provision of certain web site attributes could counter the benefits given by each attribute. In addition the effect of task scenario was considered and it was proposed that in different task conditions consumers might desire different attributes to be present. However it was noted that research in this area is sparse. Finally consideration was given to the small number of studies that draw on the Nordic School. Findings provide support for the proposition that task scenario affects the value that consumers place on web site attributes and that certain tasks, such as information seeking, are intrinsic to web site use whilst others, such as transacting, are extrinsic.

2.22 Summary: Expectancy-Disconfirmation Perspective

This section has presented an overview of the ED Perspective, this approach aims to identify the specific design elements of an innovation that promote adoption. It is an approach that delivers detailed diagnostics of web site attributes that can assist practitioners with design decisions. The ED Perspective measures both user satisfaction and evaluations of service quality. In terms of service quality there are two research streams found in the marketing literature: SERVQUAL and The Nordic School. IS research investigation has focused on end-user satisfaction that examines system quality and information quality.

A review of the application of this approach to Internet research has found that research into web site quality is dominated by SERVQUAL. Studies have developed

various scales for measuring consumer evaluations of web site attributes and the combinations of these attributes that indicate the presence of dimensions of web site quality. There are suggestions that web site attributes may be valued differently at different stages of a transaction however there is limited research that empirically tests these ideas.

In examining how the ED perspective has been applied to online banking it is concluded that there is a need for research that takes a more detailed approach to web site quality investigation. In particular studies are needed that isolate both the attributes that are unique to the online medium and task influence on web site requirements. In terms of research that compares consumer needs across task scenario only one study was identified (Lassar and Dandapani 2003). This study found that task condition did influence consumer perceptions of web site attributes and thus provides support for further exploration of this avenue of enquiry.

Section III Conclusions and Proposed Research

2.23 Findings and Proposed Research

This chapter has presented an overview of the literature on approaches to researching both new technology adoption and online banking. Its aim was to develop an awareness of the field of enquiry and provide a basis upon which to build a contribution to knowledge. It examined both the substance and the orientation of extant research. Section I classified and quantified a range of online banking studies according to three research perspectives: a Diffusion of Innovation Perspective (DoI), a User-Intention Perspective (UI) and an Expectancy-Disconfirmation Perspective (ED). It presented evidence that online banking is a substantial and ongoing field of enquiry that warrants academic investigation. Overall no single research perspective is dominant within the field of study although over time there have been periods where one research perspective has been more widely used compared to the others.

Section II provided detailed discussion of the theoretical underpinning of each research perspective. Research within the DoI perspective describes how, external factors, innovation and innovator characteristics contribute towards innovation success. A discussion of Internet adoption indicates several areas of relative advantage for information seeking and transacting activity. Previous research indicates that consumers do not perceive sufficient relative advantage in banking online. One explanation might be the early timing of these studies leading to limited awareness amongst potential users of the benefits that can be gained and thus there is a need for additional research now that familiarity with the Internet has grown.

In terms of innovator characteristics early studies indicated that adopters had distinct socio-demographic characteristics. However, online banking research is inconclusive on which socio-demographic characteristics distinguish adopters and non-adopters. There is incipient evidence within Internet research that attitudes and beliefs provide a more detailed profile of the differences between adopters and non-adopters yet this area is relatively unexplored by online banking research.

Research within the DoI perspective has highlighted that risk is a consistent barrier to Internet adoption. Studies show that the degree of perceived risk varies according to the nature of the online product and the nature of the task being undertaken. Online banking research confirms that risk and uncertainty are negative influences on adoption. However studies have gathered information from users and non-users of the Internet and thus risk perceptions specific to the online banking context have not been isolated. Hence there is a need for research amongst Internet users that controls for risks associated with the medium.

There has been criticism of SST research for focusing on the role of positive drivers of use and not exploring the inhibitors of usage (Cenfetelli 2004, Johnson et al 2008). There has been limited research into negative reaction to SST use that might result in avoidance behaviour. Johnson et al (2008: 417) conclude that failure to investigate fully barriers to online banking use “could potentially impair the effectiveness of marketing strategies designed to increase customer loyalty to SST-based services” (p417).

For example, Misiolek et al (2002) conclude that TAM is a “useful but incomplete” due to its failure to recognise the influence of risk which DOI posits to be an important influence upon innovation adoption. Similarly research within the ED Perspective focuses on the presence of attributes that are positively associated with a favourable evaluation of satisfaction or service quality, few studies have explored where the under-provision or over-provision of a particular attribute might result in a negative evaluation such as risk (Cenfetelli 2004).

This literature review has discussed that “technological paradoxes” may be present whereby the provision of one attribute reduces the effectiveness of another. Thus the presence of certain web site features might increase perceptions of risk and uncertainty over web site functionality and also service outcome. For example, Johnson et al (2008) outline how the increased functionality of a mortgage web site might make it easier for consumers to commit themselves to debt and thus result in subsequent problems. They argue that “from the standpoint of paradox thinking,

increasing the functional benefits of a SST may also increase consumer risk and fear of negative consequences” (p 418).

This literature review has also discussed how risk and uncertainty might vary according to online task. Cox and Rich (1964) identify that a consumer undertakes low-risk activity to reduce perceptions of risk and to increase their knowledge of an unknown situation. It can be argued that the use of the Internet for information seeking is one such low-risk activity that enables a less-experienced user to gain knowledge of the medium prior to transacting (Yang and Jun 2002). This review has identified that there is a scarcity of online banking research that examines information seeking as a distinct activity and no study has been identified that compares perceptions of online banking risk according to task.

This review has discussed how consideration of task context is of importance in terms of risk perception, perceived usefulness and web site quality evaluation. For example, Bauer et al (2006) propose that a more “granular” approach to measuring web site quality is appropriate. Furthermore there is a strand of research within the IS literature that proposes that technology performs better when it is aligned closely with the task characteristics (Goodhue 1998). This concept has been identified as Task Technology Fit (TTF) (Goodhue and Thompson 1995) and is defined as the degree to which technology assists an individual in performing a range of tasks. Goodhue and Thompson (1995) propose that the degree of anticipated fit between technology features and task requirements will influence pre-adoption belief and attitude and after adoption will influence post-use evaluation. Thus, by taking into account task context, TTF gives a more detailed and accurate picture of “the way in which technologies, user tasks and utilisation relate to changes in performance.” (Goodhue and Thompson 1995: 215)

TTF can be considered as complementary to all three research perspectives. For example, in relation to DoI theory “TTF should be one important determinant of whether systems are believed to be more useful, more important or give more relative advantage (Goodhue and Thompson 1995: 218). In relation to a UI Perspective TTF “will strongly influence user beliefs about consequences of

utilisation and second that these user beliefs will have an effect on utilisation” (Goodhue and Thompson 1995: 219). It can be argued that TTF is the same as the “perceived usefulness” construct within TAM. Finally in relation to an ED Perspective satisfactory performance will relate to the “satisfactory accomplishment of a portfolio of tasks by an individual” (Goodhue and Thompson 1995: 218). Thus TTF provides a richer understanding of utilisation and “is a critical construct that was missing or only implicit in many previous models” (Goodhue and Thompson 1995: 213).

This review has shown that online banking studies have taken a broad approach that fails to recognise that consumers may use a bank web site for different purposes. There is evidence from within the online banking research that different consumers do differ in the tasks that they undertake online. For example, Polatoglu and Ekin (2001: 160) identify two groups of consumers, those who use the bank’s web site for “a limited set of [online banking] facilities, primarily for information inquiry ...and another half use most of the [online banking] services including payments and investments”. Thus research is needed that explores the fit between technology characteristics and consumer requirements of across transaction phases.

This review identifies that the UI and the ED perspective require to a consumer to have used a web site. The UI perspective examines post-use “perceptions” of usefulness and ease of use. The ED perspective examines how a “gap” between expectation and post-use perception results in an evaluation of service quality or satisfaction. Thus these approaches can be classed as focussing on the decision to continue use rather than to trial an innovation (Bhattacharjee 2001). Within the ED perspective some studies focus on consumer expectations of web sites (Zhang and von Dran 2001, Waite and Harrison 2002, Tsikriktsis 2002). However these studies are positioned as the initial stages of research that ultimately aims to capture the evaluative judgements of users (see for example Lankton and Vance-Wilson 2007). Thus there is a need to develop an approach to explore both user and non-user web site evaluation in order to deepen understanding of the influences on subsequent adoption behaviour.

One approach that enables examination of user and non-user evaluation is to explore how expectations differ amongst users and non-users of a web site. Using this approach it is possible to gather information from both users and non-users. For example Dabholkar (1996) identifies that the only type of evaluation a consumer may hold about an untried technology is expectation. Furthermore, there is evidence that negative expectations can account for non-use. For example, Lichtenstein and Williamson (2006:57) find that non-users form “views of complexity and site design usability issues without having sighted Internet banking applications.”

Lichtenstein and Williamson (2006) are reporting “predictive” expectation (what will take place) however this review has also commented on the presence of “normative” expectations (what should take place). Predictive expectations contain an element of belief that an event will occur. Normative expectations relate to an individual desire that an event should take place and therefore are seen as incorporating consumer needs and wants rather than solely probability judgements. Sirgy (1984) suggests when consumers do not have prior experience of a product then predictive and normative expectations are compared and that adoption is dependent upon the extent to which the predicted performance matches the desired performance. Thus the consumer is treating

the expected product performance as the perceived state to be compared with an evoked referent state such as old, ideal deserved, least expected and significant other product performance (Sirgy 1984: 31).

The position of this thesis is that that there is scope within the context of web site research to investigate the relationship between the normative and predictive expectation consumers and to investigate whether gaps or “fit” between expectation levels influence behaviour. For example, the normative/wanted and predicted expectations of certain web site attributes may have a closer fit for a user than for a non-user. It would be of interest to identify whether the “fit” between normative and predictive expectations becomes a significant determinant of use for specific attributes.

Thus this thesis will explore the relationship between predictive and normative expectations of web site attributes amongst both bank web site users and non-user. It

will examine expectations that web site attributes should be present and expectations that web site attributes will be present for two different task scenarios. It will then uses “should” expectation as a referent state and explore how any gap between expectation levels contributes to perceived task risk.

2.24 Chapter Conclusion

This review has shown that each research perspective generates insight into the influences on consumer adoption of online banking. There are several influencing factors that are commonly supported. For example, perceived usefulness is an important influence on adoption, perceived risk is a strong negative influence and web site attributes of “reliability” and “accessibility” are important dimensions of online service quality. Yet there remains “a high degree of variation” amongst studies into Internet adoption and the adoption process remains a “black box” (Chen and Corkindale 2008: 293).

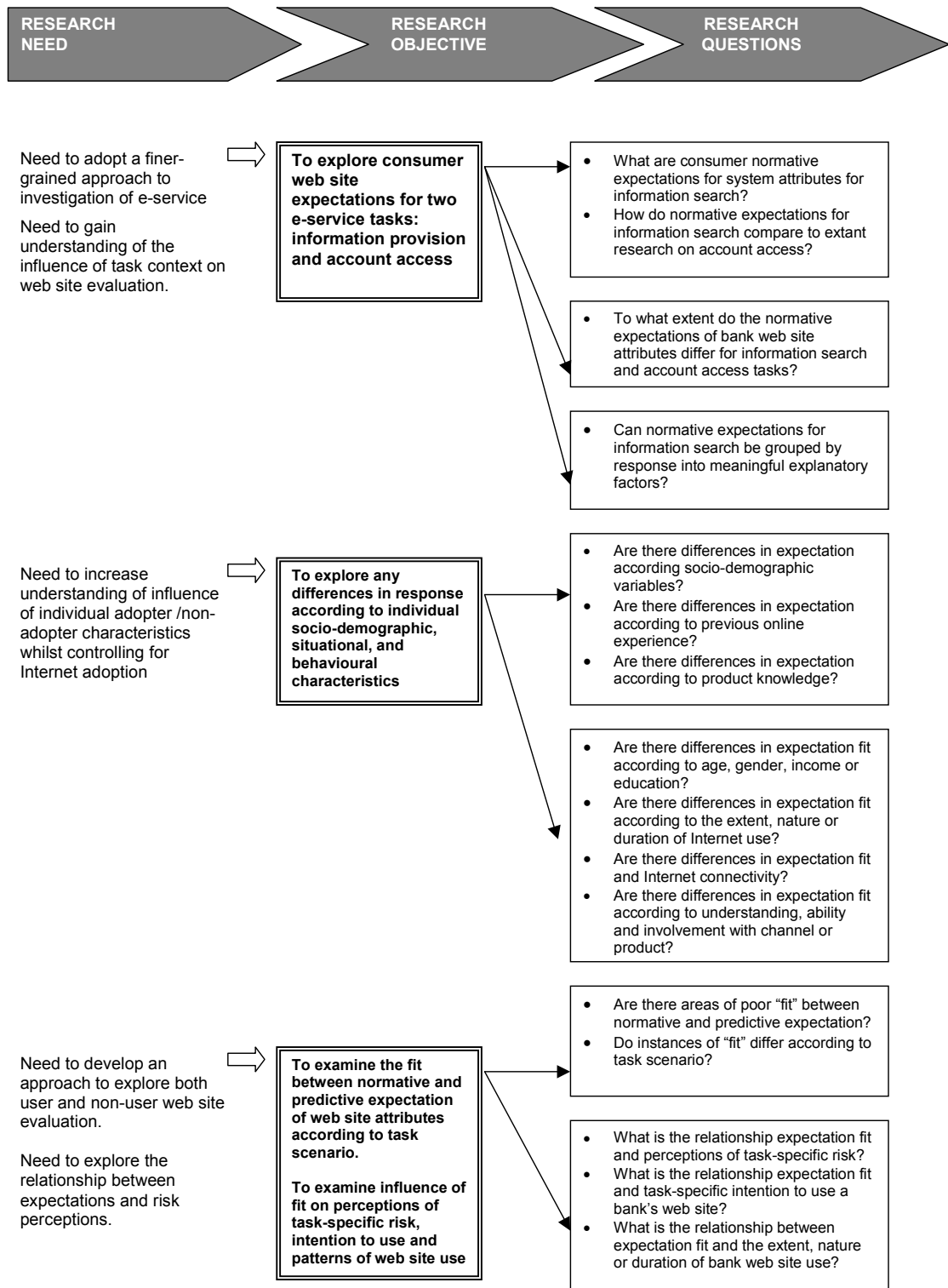
There exists as yet, no comprehensive, fully validated framework for understanding or predicting consumers’ online service adoption (Bobbit and Daholkar 2001, Santos 2003). Furthermore it is debatable whether the study of Internet adoption has yet reached a stage to warrant formulating a system of generalisations governing online behaviour or that given the range of web site activity whether such a model is possible. For example, Agarwal and Venkatesh (2002) suggest that users who visit web sites do so with a variety of different goals and purposes thus the richness and diversity of activity possible on the Internet may prevent one generalisable model of web site use being developed.

There are indications of a range of factors that influence consumer attitudes towards adoption and continued use of online banking. The development of online banking research indicates that an exploratory approach has the potential to develop fresh ideas and new avenues for research whilst a confirmatory approach may prematurely limit understanding (Stebbins 2001). Thus it is proposed to conduct an exploratory study that addresses the following research needs:

- The need to adopt a finer-grained approach to e-service adoption and in particular to examine how consumer expectations of a bank's web site vary according to task context.
- The need to increase understanding of the characteristics of the online banking adopter/ non-adopter whilst controlling for Internet adoption.
- The need to develop an approach to explore both user and non-user web site evaluation.
- The need to increase understanding of how the fit between normative and predictive expectations of web site attributes relates to perceptions of risk and whether these relationships change according to task context.

It is proposed to explore what Internet users expect of their own bank's web site for information search and account management activity. The research will gather perceptions of risk and the degree of uncertainty that participants have over the presence of a range of web site attributes and the desirability of the presence of these attributes for each task. This approach draws on all three research perspectives. For example it draws on: the DoI perspective by incorporating the influence risk, the UI perspective by examining how attitude towards a behaviour (risk) influences intention and the ED perspective to explore how expectation of web site attributes vary according to task context. Figure 2.17 provides an overview of the research needs, objectives and questions. The next chapter will describe the research methodology that is used for this study.

Figure 2.17 Research Needs, Objectives and Questions



CHAPTER 3 METHODOLOGY

3.1 Chapter Introduction

This chapter addresses research issues, methods and choices. It contributes to the thesis by providing a detailed description of the path that was taken in order to advance knowledge in the research area. It is hoped that subsequent research will be able to draw on this methodological account in order to develop enquiry into online banking systematically.

The literature review examined the approaches used to explore online banking adoption. The review concludes that:

- Research into online banking adoption has focused on account management tasks. Thus there is a need for research into online information seeking.
- Several studies fail to control for non-adoption of the Internet and thus findings may be influenced by a negative attitude towards the Internet in general. Thus there is a need for research that gathers information from Internet users on their intentions towards online banking.
- Several studies adopt a deductive research strategy and use confirmatory techniques for what can be considered an emerging phenomenon. Thus, at this stage of knowledge development, it is considered appropriate to conduct exploratory research into the differences and associations between factors that might influence online banking adoption.

This thesis aims to provide a finer-grained understanding of e-service adoption through detailed, precise and theoretically informed research. The research objectives are:

- to explore consumer expectations of bank web sites according to task condition
- to explore how responses vary according to individual characteristics whilst controlling for Internet adoption

- to develop an understanding into how two elements of fit (between task and technology and between normative and predictive expectation) are associated with risk and intention to use a bank's web site.

This chapter is divided into two sections. Section One presents an overview of the phases of data collection, the philosophical orientation of the thesis and how this influenced the choice of research strategy. Section Two details the conduct of research: discussion in this section focuses on: data collection procedures, sampling strategy, research instrument development and data analysis techniques. The chapter concludes with a consideration of the overall research approach.

Section I Research Design

3.2 Section Introduction

This section presents an overview of the research design and then discusses the epistemological and ontological philosophy of scientific realism that underpins the thesis. The chapter outlines how the philosophical position informs the choice of research strategy and provides a rationale for the choice of data collection and analysis approaches for each phase of the study.

3.3 Overview of Research Phases

The empirical work for this thesis was conducted in three phases. Figure 3.1 shows the links between the research objectives, the research questions and each research phase. Figure 3.2 outlines the aims and objectives of each research phase. Phases 1 and 2 aim to develop an understanding of consumer expectations of web site functionality for information search task. The literature review found that there was limited online banking research that focused on information search activity. Thus in order to compare how requirements vary across task conditions it was necessary to explore which attributes consumers expected a bank web site to have for information search activity and if there was sufficient evidence of distinct requirements to proceed with Phase 3.

Phase 3 of the research extends the findings of Phase 1 and 2 by gathering and comparing expectations for two task scenarios. Phase 3 of the study explores whether expectations vary across task condition, examines fit between predictive and normative expectation and explores how expectation fit influences risk perceptions and intention behaviour. Phase 3 gathers data from a stratified random sample of UK Internet users and also explores links between response and individual characteristics.

Figure 3.1 Links between Research Objectives, Questions and Study Phases

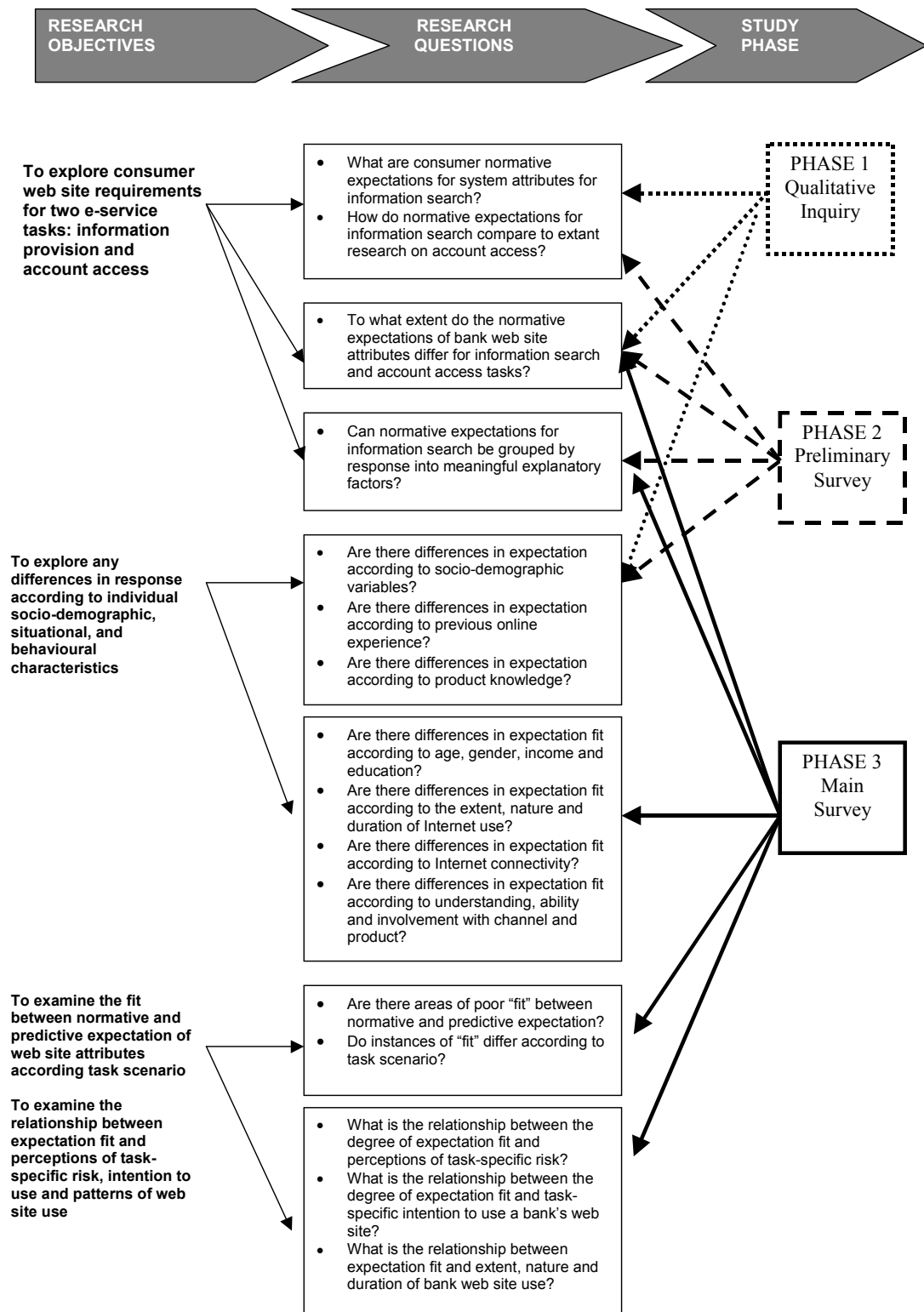
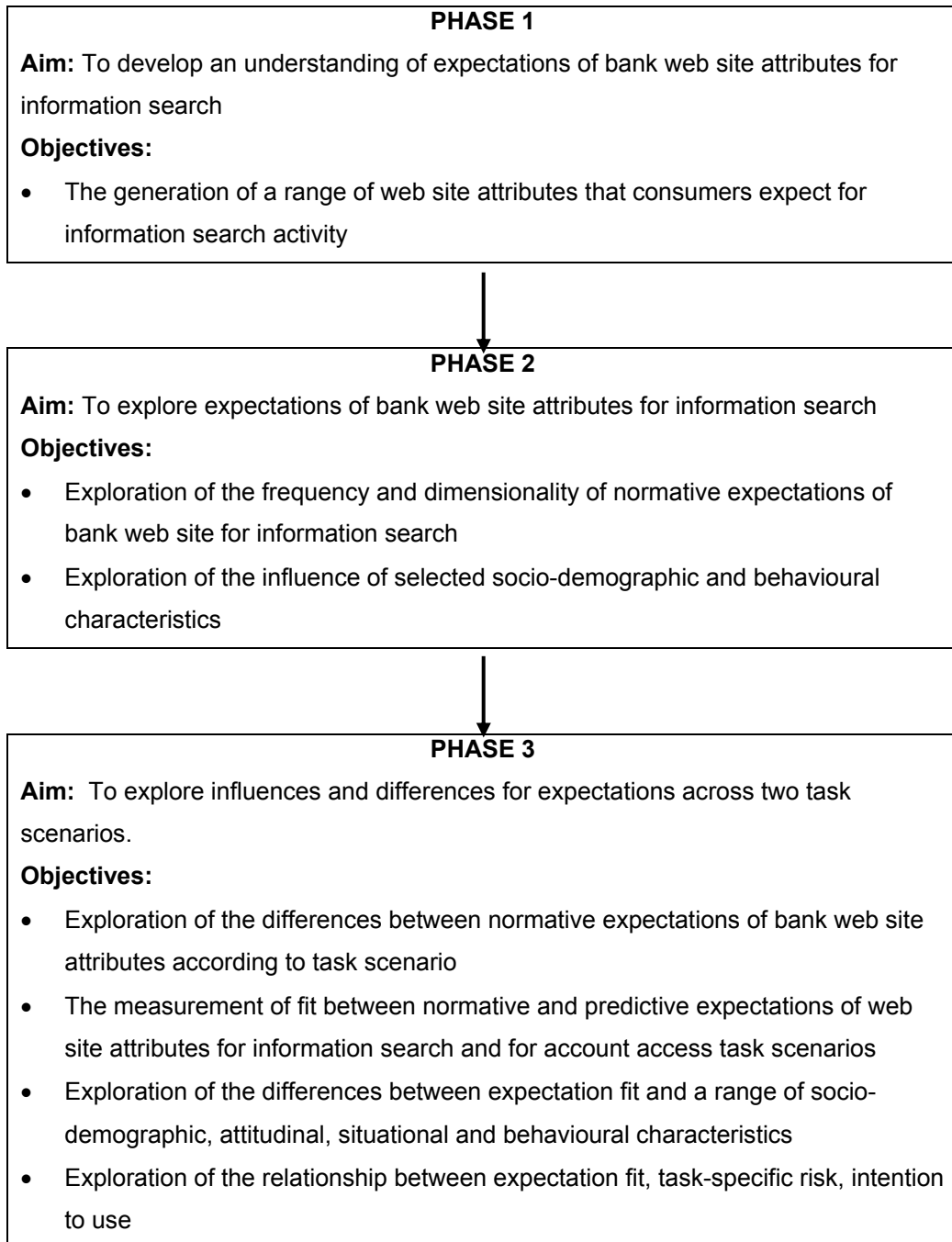


Figure 3.2 Research Phase, Aims and Objectives.



3.4 Research Philosophy

It is important that a researcher addresses ontological and epistemological issues “in order that sound methods for enquiry can be laid down in advance of the empirical research itself” (Hughes and Sharrock 1990: 5). Hunt (1991: 32) identifies that there has been much “spirited debate” within marketing as to the nature of the knowledge which is being sought (ontology) and the ways by which this knowledge can be achieved and evaluated (epistemology). The structure of this debate is frequently viewed as dichotomous with two opposing philosophical camps (Dang and Koshy 2005). The two positions have been characterised as positivist (which has also been taken to include adherents of empiricism, rationalism and realism) and interpretivist (with reference to idealism and relativism) (Hunt 1991, Kavanagh 1994, Easton 2001).

3.4.1 The Positivist Position

The positivist ontological position asserts that there is a single objective reality that can be known through the rigorous application of scientific techniques (Robson 1993). Positivism considers that meaningful knowledge can only be obtained through empirical observation (Peter and Olson 1983) and strict positivism rejects the use of unobservable concepts. The aim of positivism is, through the observation of regularities, to formulate laws and theory that explain and predict events. The observation of regularity is often misunderstood as an attempt to identify causality, however positivism rejects causality as an unobservable concept (Hunt 1991).

Epistemologically, positivist researchers consider that marketing should aspire to scientific status and that research should follow the patterns of investigation of the natural sciences. Buzzell (1963:13) states that adhering to the scientific method will deliver “... a classified and systemised body of knowledge organised around one or more central theories and a number of general principles.” Anderson (1983:19) writes that for positivists “the scientific process begins with the untainted observation of reality”: thus positivists evaluate research findings according to their validity and generalisability. In terms of research techniques, positivist researchers have made extensive use of quantitative techniques of data collection and analysis (Hunt 1991).

The positivist position is identified with both inductive and Popperian deductive research strategies (Anderson 1983).

3.4.2 The Interpretivist Position

Interpretivist ontology is summarised as the belief that members of society live in a world of meanings (Hughes and Sharrock 1990) and that the social world is composed of multiple subjective realities that are constructed and lived by individuals. Interpretivists argue that since researchers are also social actors they are bound by context and thus “knowledge-products can be affected as much by sociological factors as by purely “cognitive or empirical considerations” (Anderson 1983: 156). In other words, all research, no matter how “scientifically” conducted, is inherently “embedded in commitments to particular versions of the world” (Hughes 1980:11) and thus we cannot distinguish between the “true” world and our perceptions of it (Williams and May 1996).

Epistemologically, interpretivists reject the notion that the social sciences should adopt the methods of the natural sciences (Hughes and Sharrock 1990). Seale (1999) notes that interpretivist research does not aim to establish an “objective truth” but rather a locally relevant, honest account of what has been observed. Thus interpretivism has been accepting of relativism, which identifies that there can be several competing claims to knowledge and truth (Hunt 1990). In terms of research techniques, interpretivists have made extensive use of qualitative techniques of data collection and analysis. The interpretivist position is primarily identified with an inductive rather than a deductive research strategy.

3.4.3 The Reconciliation of Scientific Realism

There have been several attempts to achieve an epistemological co-existence between the two different schools of thought (Hunt 1991). Bryman (1988: 93) argues that the extent of the difference between epistemological positions is an exaggeration and that one result has been “to treat quantitative and qualitative research as though they are mutually antagonistic ideal types of the research process”. Wilk (2001: 10) argues:

that the common linkage among particular research methodologies (quantitative and qualitative) with philosophical extremes is completely unnecessary. There is no particular reason why a positivist or a humanist cannot use any of the whole range of methodologies available in a way completely consonant with their own goals and assumptions.

Researchers identify that, despite its longevity and good intentions, this dichotomous debate has been “largely unproductive” (Peter and Olson 1983: 111) and that “the fight has run its course” (Kavanagh, 1994).

In search of a “middle ground” Hunt (1990: 9) identifies scientific realism as “an appropriate philosophy for guiding marketing theory and research” (p 13). Scientific realism is defined as a philosophy that proposes that:

(1) the world exists independently of its being perceived (classical realism), (2) the job of science is to develop genuine knowledge about that world, even though such knowledge will never be known with certainty (fallibilistic realism), and (3) all knowledge claims must be critically evaluated and tested to determine the extent to which they do, or do not, truly represent or correspond to that world (critical realism). (Hunt 1990: 9)

Hunt (1990) argues that scientific realism is an appropriate philosophy for marketing research on three points of practicality:

1. Scientific realism is consistent with extant research, which has adopted its tenets either implicitly or explicitly.
2. Scientific realism gives due regard to the success of science but is a system open to all techniques and procedures. Although this approach did not placate interpretivists who continued to insist that a “realist ontological position in the social domain is untenable” (Zinkhan and Hirschheim 1992:82).
3. Scientific realism, unlike positivism, is open to the investigation of unobservable concepts in that “scientific realism contends that the explanatory, predictive and pragmatic success of a theory provides evidence for the existence of its associated entities, be they observable or unobservable” (Hunt 1991: 35). Hence, scientific realism can accommodate latent constructs such as attitude, intention

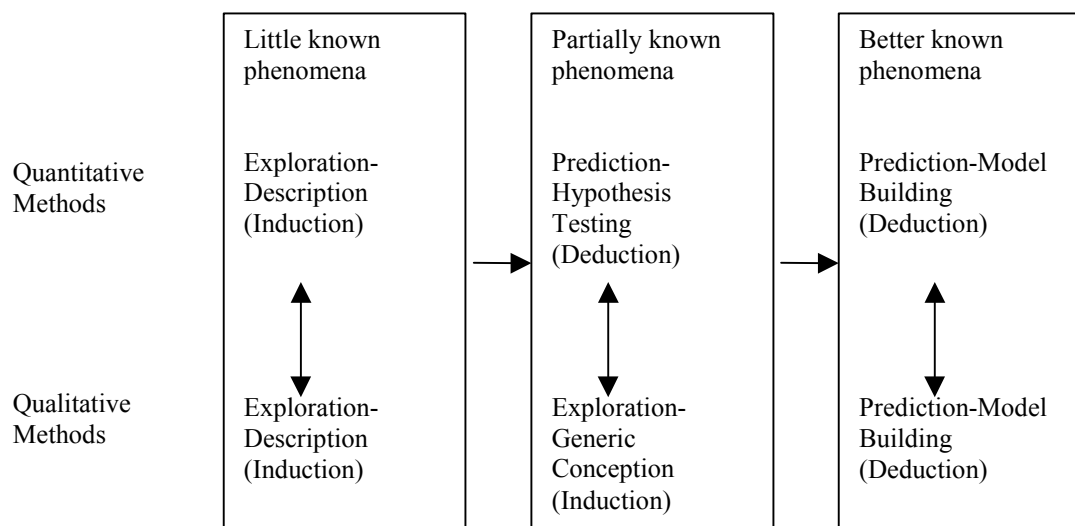
and belief that are elements within much of consumer research theory (Hunt 1991).

Thus it is the ontology and epistemology of scientific realism that have informed this research.

3.5 Research Strategy

This is an exploratory study. Exploratory research is defined by Robson (1993) as finding out what is happening, seeking new insights, asking questions and assessing phenomena in a new light. Stebbins (2001) states that the main goal of exploratory research is the production of inductively-derived but contextually-rooted generalisation. Thus, exploratory data analysis helps a researcher develop ideas about the nature of events and provides a grounding for hypotheses which may be generated for testing in subsequent enquiries (Erickson and Nosanchuk 1995, Stebbins 2001). Exploratory research is important within social science, since complete reliance on confirmatory approaches and deductive reasoning may constrain the development of new knowledge and ideas (Stebbins 2001).

Figure 3.3 Relationship of Qualitative and Quantitative Methods



Source: Shaffir and Stebbins (1991).

Figure 3.3 presents an overview as to the position of exploration in a research process and the objectives of quantitative and qualitative research methods at each stage (Shaffir and Stebbins 1991). Although in this figure exploratory research is presented as primarily inductive it is anticipated that there will be stages of deductive reasoning where the researcher confirms emergent generalisations by reference to established theory (Stebbins 2001: 7).

This thesis adopts a hybrid research strategy that combines qualitative and quantitative techniques. This is a “complementary purposes” model of research “to address different but complementary questions” (Robson 1993:290). Using qualitative research outside of an interpretivist epistemology and in combination with quantitative techniques is source of controversy and confusion (Bryman 1988). For example a hybrid strategy may give unequal treatment of each technique and may produce incomplete findings (Cunningham-Burley et al 1999, Denzin 1988, Blaikie 2000).

However a hybrid strategy does not necessarily result in a loss of rigour and can provide richer data to enhance the interpretability of findings and facilitate a critical approach to enquiry (Denzin 1989; Frey and Fontana 1993, Robson 1993). There are “many situations in which such combinations will yield data that are more useful than either method taken alone” (Morgan and Krueger 1993: 9) and combining methods facilitates a more comprehensive and deeper understanding (Fielding and Fielding 1986, Kelle 2001). Morgan and Krueger (1993) support the use of combining methods whilst “attacking the myth that [qualitative research] must be backed up by other methods”.

By basing itself within the scientific realist paradigm this research takes the view that each technique is complementary to the other in its attempt to capture reality. Qualitative research is used to enhance the external validity of measures as a key stage within the inductive phase of the research. Thus this research strategy is in accordance with the critical element within scientific realism which seeks “to generate the most accurate possible description and understanding” (Hunt 1990: 9).

3.6 Rationale for Qualitative Enquiry

Consistent with the scientific realist perspective and exploratory nature of the enquiry, qualitative data was used to generate a range of expectations of the web site features that consumers associate with online information search. In order to determine whether consumer expectations of web site features vary according to banking task it was necessary to generate a list of those features that were valued for information seeking. Oliver (1996) describes three approaches to list determination. The first is to rely on broad-based principles that are universally accepted as valid. The second is to use generally accepted feature lists, which contain a fair level of abstraction and the third is consumer driven and may be constructed at any level or at mixed levels of abstraction.

The literature review identified that there is little research into the use of bank web sites for information search activity. Thus there is no generally accepted list available for this context. The use of lists generated in other contexts was considered in order to compose a broad-based list. However research shows that such lists provided limited insight into subsequent behaviour since consumers view attributes at a lower levels of abstraction idiosyncratically according to their own preferences within a service context (Myers and Shocker 1981).

For example, the content analysis of online banking service quality research shows that “reliability” is a label that is consistently applied within factor analyses of web site quality items; however to the individual the items within the factors thus labelled may differ considerably. Thus, as researchers vary in their interpretation of what is meant, by the construct “reliability” in a given context, so might consumers (Oliver 1996). Oliver (1996) notes that the use of a consumer-generated list is the most common technique used to determine key performance dimensions particularly where there is little other basis for discovering performance dimensions. Thus it was decided to conduct a preliminary study amongst Internet users to compile a consumer-generated list of features.

In accordance with the approach proposed by Shaffir and Stebbins (1991), focus groups and a review of the extant literature were used to derive items relating to online information seeking for financial services information. The purpose of the

qualitative phase of the research was to identify patterns of consistency and inconsistency of response to guide further enquiry. Qualitative research aims to capture the “social actors’ point of view” of a phenomena (Blaikie 2000). In addition, the use of qualitative methods in the early stages of the research captured a “processural view” which involves some degree of longitudinal data through participants’ recollections (Bryman 1988: 140). Thus qualitative methods were appropriate in generating insight into how individual expectations of information provision interact and interconnect with other online behaviours and how expectations may have changed over time.

Grounded Theory was used to inform and guide the qualitative data analysis. This method attempts to generate theory from empirical data. Grounded theory techniques are designed to show transparency of process and to provide the basis for replication, which are two characteristics of a scientific approach. (Strauss and Corbin 1990, Strauss and Corbin 1994). Thus this technique was chosen as consistent with the scientific realist philosophy that directs this study.

3.7 Rationale for Quantitative Enquiry

This thesis explores the association between and within response for web site attributes and initially an experimental design was considered. However experimental research may lack experimental realism, where the treatment fails to impact on or involve the subjects and mundane realism where the laboratory conditions fail to replicate the complexity and ambiguity of the real world (Aronson and Carlsmith 1986, Robson 1993). Thus this approach was rejected.

Survey research seeks “to describe and /or analyse...[or] explore, some aspect of the world out there *as it is*” (Robson 1993: 124 original italics). The use of survey research addresses the research needs outlined in the literature review that questioned the generalisability of findings. Hakim (1987) notes that the transparency or accountability of survey results in a research design is visible and accessible. Thus the use of survey research is in keeping with the scientific realist paradigm within which this thesis operates.

Survey research is defined as:

the collection of data on a number of units and usually at single juncture in time, with a view to collecting systematically a body of quantifiable data in respect of a number of variables which are then examined to determine patterns of association (Bryman 1989: 104 cited in Robson 1993: 124)

Survey research can either be cross-sectional (collected at a single moment in time) or longitudinal, whereby the survey can be repeated at another point, or multiple points, in time using the same sample (Robson 1993). Phases 2 and 3 of this research followed a cross-sectional research design in order to satisfy the research objectives and to address constraints on resources. Both phases used self-administered questionnaires to capture quantitative response. Self-administration was chosen in preference to alternative measures to ensure quality of response. In particular it was felt that given survey length and section repetition that intercept or telephone interviews would cognitively over-load participants (Brace 2004).

Oppenheim (1992) identifies two types of survey design: descriptive and analytic.

The purpose of a descriptive survey is to count..[it] tell[s] us how many.. members of a population have certain opinion or characteristic or how often certain events occur together” (p 12).

In contrast an “analytical, relational survey is set up specifically to explore the associations between particular variables” (Oppenheim 1992: 22). Phases 2 and 3 used an analytical as opposed to a descriptive survey approach in order to explore the associations between and within responses on levels of expectation and perceptions for web site attributes and selected variables (Oppenheim 1992).

The research philosophy and the aims of the study informed choice of analytical techniques. For example, relationships between study variables were explored using bivariate and multivariate analysis however no causality is assumed. Exploratory factor analysis was conducted in order to identify any underlying constructs amongst consumer evaluation criteria. Within the realist paradigm statistical approaches that reduce the complex and transitive nature of social phenomenon to relationships between only directly observed variables have been questioned (see Olsen 1999,

Pratschke 2003). Exploratory factor analysis was chosen as a technique that is appropriate within scientific realism due to its ability to explore the relationship between any latent variables and observed variables and thus enhance the explanatory power of the enquiry (Pratschke 2003).

3.8 Section Summary

This section has presented aims of objectives of the three phases of the thesis. Subsequent to the review of extant knowledge in Chapter 2 it has been identified that it is appropriate to conduct an exploratory study that aims to increase understanding of a little known phenomenon and thus develop knowledge that can inform subsequent programmes of research. The research is conducted within the scientific realist paradigm and attempts to increase and enhance knowledge through the rigorous application of appropriate techniques. However it also acknowledged that it is not possible to access truth independent of subject and context and that any understanding will be contingent rather than absolute. The study combines both qualitative and quantitative phases in order to generate understanding and then to measure, describe and analyse associations between variables of interest. Section II of this chapter now proceeds to detail the techniques used in the collection and analysis of each phase of the study

Section II Research Phases

3.9 Section Introduction

This section outlines the research decisions taken and the method chosen for each of the three phases of the research. There are three sub-sections: one for each phase of the research. Each sub-section gives the aim of the research phase, provides detail on the techniques implemented and concludes with a discussion of action taken to address ethical considerations.

3.10 Aim and Scope of Phase 1

Phase 1 research aimed to generate insight into how consumers value the Internet as a source of information. Focus groups were used to gather a range of responses from participants to questions about the value placed on the Internet as a source of information and their normative expectations of bank web site attributes.

A focus group is defined as a group interview that captures interaction between group members in response to topics supplied by the researcher (Morgan 1997). The focus group format provides, “data on realities defined in a group context, and on interpretations of events that reflect group input”, (Frey and Fontana 1993). Morgan (1997: 2) states that focus groups make “explicit use of group interaction to produce data and insights that would be less accessible without the interaction found in a group”. The choice of the focus group instrument is appropriate for a study of innovation adoption. In particular, Rogers (1995) proposes that the adoption process is heavily influenced by word of mouth. Thus this thesis utilises group discussions to explore the extremes of views expressed, the interaction between these views and the consensus achieved in the context of online banking.

The focus group instrument lends itself well to the use of multiple data gathering techniques since it captures the opinions of a large number of subjects both by triangulating methods by adding a human element and triangulating data by supplying multiple opinions (Albrecht 1993, Frey and Fontana 1993). In addition group interviews by allowing opinions to bounce back and forth and be modified by the group also triangulate internally. The findings from the focus groups were used to

generate a set of evaluative criteria for the following research phases that were grounded in the terms of Internet users.

3.10.1 Composition and Piloting of Topic Guide

Prior to the focus groups a topic guide (Appendix IV) was formulated in order to anchor the discussion to the research area. Topics were chosen in accordance with areas of interest that had been identified through the literature review. Respondents were asked to outline how they used the Internet to search for information, the advantages and disadvantages that they gained from online information search and the features that made the Internet an excellent source of information. The discussion then focused on online banking and financial services. Respondents were asked to recount their experiences of searching for information online and to discuss how their bank might design its own web site to achieve excellence in customer information provision.

Questions were ordered so that the initial questions “help set the stage” and relax participants before moving into more specific and critical areas. Whilst the topic guide was used to provide moderator guidance the enquiry was mindful that “a focus group is a dynamic and idiosyncratic exercise so... flexibility in pursuing new questions is critical to the success of the interview” (Stewart and Shamdasani 1990: 62). Therefore topics were introduced and developed in response to group discussion in order to make explicit use of the group interaction to produce data and insights (Morgan 1997). Prior to implementation the topic guide was tested in an informal discussion with the researcher’s peers and minor adjustments to question wording were made to facilitate comprehension.

3.10.2 Instrument Administration

Data was collected in March 2001. A convenience sampling technique was used. Focus group participants were students recruited through lecture announcements and e-mail. It was felt that students were a valid source of data since they form part of the 16-24 age group that are largest group of Internet users in the UK. In addition, it has been noted that students are an attractive target market for banks and building

societies partly due to their future earning potential and also their levels of debt (Lewis and Bingham 1991).

The decision to utilise a convenience sample reflects the fact that a research strategy is determined not only by the needs of the research questions and the research paradigm but also by researcher resources (Remenyi et al 1998). Convenience sampling is consistent with the exploratory aims of the research and the techniques chosen. However it should be recognised that it is not valid to generalise the findings to a wider population (Blaikie 2003). However Punch (2003) notes that, despite this limitation, findings are capable of building knowledge.

The researcher was the sole moderator for the focus groups: this is a challenging role. For example, Vaughn et al (1996: 93) caution that “a moderator working alone may have difficulty in completing everything on time and in a professional manner”. Limited resources meant that it was not possible to recruit a moderator aide and therefore care was taken in advance planning and undertaking the appropriate research training (Krueger 1993). The moderating style was consciously relaxed in order to counter the problem of biasing responses through being viewed as a tutor.

3.10.3 Data Analysis

Data analysis was informed by the coding techniques of grounded theory (Glaser and Strauss 1967). Grounded theory is an inductive technique where “the researcher begins with an area of study and what is relevant to that area is allowed to emerge..theory derived from data is more likely to resemble “reality” than is theory derived by putting together a series of concepts based on experience or..speculation”(Strauss and Corbin 1998:12). Thus it is appropriate to use grounded theory techniques when the study is exploratory (Titscher et al 2000).

Grounded theory has been identified with the interpretivist paradigm (Straus and Corbin 1994) however Charmaz (2000) argues that it is more consistent with a positivist or realist epistemology because of an emphasis on rigour and validity. Strauss and Corbin (1994) counter-argued that this method attempts to generate objective, relevant, useful theory that is closely linked to empirical data and therefore fulfils the “usual criteria of good science” (Strauss and Corbin 1990: 250). Thus this

analytical technique was adopted as being consistent with the scientific realism philosophy which guides this research.

Qualitative data analysis was undertaken in several iterative stages. Grounded theory procedure proposes several stages of coding: open coding, which is the process of attaching categories or concepts to the raw data; axial coding, which groups the open codes to propose relationships between concepts; and selective coding, which selects the core categories that organise the axial codes into a coherent whole (Strauss and Corbin 1998).

The focus group discussion was transcribed and the transcripts were read to identify patterns and themes that related to the research questions. These patterns were then used as open codes and a second reading was undertaken applying these codes to the data using the NUDIST*4 coding software. Computerisation of qualitative analysis techniques has led to attempts to standardise procedure and has challenged “the dichotomy of quantitative and qualitative method” (Richards and Richards 1991:39). Computers also introduce greater transparency into the task of analysis and enables the presentation of conceptual models in a clear and meaningful way giving the impression of subjectivity (Davies 1991). However Lee and Fielding (1991: 5) note the computers only perform the clerical tasks of searching and retrieval with coding remaining dependent on the analyst.

The transcripts were re-read a third time to assess the consistency and accuracy of the coding within and across the focus groups and participants. The open codes were then grouped as axial codes in order to reveal relationships between themes. These findings were reflected upon and a fourth re-reading was undertaken before selective coding which grouped the axial codes around core concepts. This coding process encourages rigour and ensures that the researcher remains close to the data under consideration by keeping the data in the foreground. Charmaz (2000) states that this method of coding counteracts the inclination to impose existing theories or individual beliefs on the data and helps the researcher to remain in touch with the subject’s own views of their realities. The coding categories are given in Appendix V. As a result of this procedure 30 items were developed for further testing. The results of the data analysis are reported in Chapter 4.

3.10.4 Ethical Considerations

There were several ethical considerations when determining data collection. Consideration was given to the choice of student participants. The researcher, as a postgraduate tutor, was in a position of influence, concerns were that students might have felt coerced into participating in the research and that their rights to not being approached for research purposes on campus were being infringed. In order to resolve these issues, the students were assured that participation was voluntary, no course credits were attached to participation and the researcher did not approach any student groups in which she had direct involvement. Discussions were undertaken informally with academic staff and student representatives and there was a consensus that student participants would gain experience that could benefit them in their own research projects.

Lewis (2003) identify that for qualitative research the ethical considerations include ensuring informed consent, anonymity, confidentiality and protecting participants from harm. In accordance with these guidelines, prior to the commencement of the focus group the concepts of informed consent and group confidentiality were explained to the participants and it was stressed that an individual could withdraw from the study at any stage of the research. Finally after the data had been gathered it was stored securely and separately from any documentation that identified participants.

3.11 Aim and Scope of Phase 2

Phase 2 explored further the expectations of web site functionality for a bank's web sites that were identified in Phase 1. The research objectives were to examine the frequency and dimensionality of normative expectations and the influence of selected socio-demographic and behavioural characteristics. Thus Phase 2 employed an analytical survey to explore the associations between and within responses on levels of expectations for bank web site attributes in the context of information seeking and selected demographic and behavioural variables. The questionnaire was designed to address the following research questions:

- To what extent do the expectations of attributes generated within the focus groups correspond with the expectations of a wider range of individuals?

- Can these expectations be grouped by response into meaningful dimensions?
- How do these dimensions compare to extant research on account access?
- Is there a relationship between the individual characteristics of the information seeker and the level of expectation that they hold?

3.11.1 Questionnaire Content

There were two sections of the questionnaire. Section One contained demographic and behavioural questions. In addition to age, gender and year of study various dimensions of online behaviour were explored including frequency and length of experience Internet use and whether they had previously visited their bank's web site. Respondents were also asked to provide a self-evaluation of knowledge of bank products and services. Section Two contained lists of attributes generated from the focus group study. The instrument included instructions on how to complete the scales and outlined a scenario of seeking current account information. The following sub-sections outline each section of the questionnaire.

3.11.1.1 Section One. About You

The purpose of this section was to gather data on the respondent characteristics in terms of socio-demographic details, online behaviour and financial knowledge. Respondents were asked to give their year of study, age last birthday and gender. The majority of Business Studies 1 students are first year students; other students can attend the course but would be in a minority. It was intuitively felt that the year of study would influence the subsequent responses, however these would be in the minority and a small number of cases would not allow detailed analysis. Therefore it was decided to screen out respondents who were not first year students and those who were not aged between 16-24 years. Participants were also asked to state if they were male or female, since the research literature indicates that gender may be an influence on Internet usage and information search behaviour.

Dichotomous responses (Yes/No) were requested for questions about online shopping activity, online banking activity and prior bank web site visits. In addition respondents were asked to indicate the number of years that they had been using the

Internet and the number of hours that they used the Internet in a week. A subjective measure of banking knowledge was used (Table 3.1) since it is argued that subjective knowledge provides a better understanding of a decision makers' systematic bias and heuristics than objective knowledge, i.e. it indicates consumers perceptions of the levels of internal information that they hold (Park and Lessig 1981).

Table 3.1 Banking Knowledge

Please indicate what you consider your knowledge in general of the services and products offered by banks to be

Good: Better than average: Average : Less than average: Poor:

3.11.1.2 Section Two: Bank Web Site Expectations

This section gathered information on the degree to which respondents expected various web site attributes to be present on a bank web site if they were seeking information. The list of attributes was constructed using the statements that were developed from the Phase 1 research (Table 3.2). Thus items were created in terms that were familiar to the students (Chisnall 1997). The instrument included instructions on how to complete the scales and outlined a scenario of seeking current account information.

Respondents were asked to indicate their agreement with the statement "A bank web site should have the following features to deliver excellent online information" using a Likert Scale. This is a verbal rating scale developed by Likert (1932) whereby respondents use categories of agreement to indicate their response to an item. Chisnall (2001) notes that Likert scales are easy for respondents to understand, have good reliability and give good information about the degree of respondents' attitudes. This has resulted in Likert scales being "the most frequently used method of scaling" (Chisnall 2001: 217).

Table 3.2 Phase II Bank Web Site Attributes

You are looking for general information about a bank. Instead of contacting the bank through the branch or over the telephone you choose the Internet.

Please imagine the bank web site that, in your opinion, would deliver excellent online information. Using the scale below please show the extent to which you agree that the bank web site should possess the features described.

A bank web site should have the following features to deliver excellent online information

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Be quick to download	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Be available in branches via a special terminal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have flashy graphics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have a site map	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have a search engine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have a requirement to register before supplying information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have links to other web sites such as Which? and other consumer organisations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Be easy to use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have pop-up windows	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details of security arrangements for banking online	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details of how many bank branches there are	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details of branch locations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details of current interest rates being offered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details of competitors rates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details of special packages available for students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details of overdraft facilities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details of bank charges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details of when bank charges apply	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details of how to pay money in	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details of how to transfer money between accounts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details of foreign exchange rates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details of commission charged for foreign exchange	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have a frequently asked questions page	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have the facility to send in questions by e-mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have contact details for complaints	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have the facility to order brochures and more detailed information online	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have sufficient information to decide to purchase a service without getting more information from elsewhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have daily updates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have an online tutor to explain how to use the web site	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have all banking needs included in menu options	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

There is debate over the optimum number of response categories within a Likert scale and there is no indication of the best number of options (Chang 1994). The first draft of the questionnaire used a 7-point scale since there is evidence that increasing the number of scale points enables greater response discrimination particularly where stimuli are familiar (McKelvie 1978). Response discrimination is desirable for factor analysis procedures. However when this instrument was piloted respondents indicated that a 7-point scale caused response fatigue. A four-point scale was considered however Guy and Norvell (1977) found that when a mid-point was omitted there was a greater tendency for respondents to give no response and in addition there was a shift towards middle-range responses, which suggested a tendency for respondents to compensate for the missing mid-point. Thus in the final instrument a 5-point Likert scale was used, all points were labelled and a neutral point was provided.

3.11.2 Questionnaire Design

Key considerations in survey design are; question order and question design (Oppenheim 1992, Brace 2004). This sub-section discusses each of these issues in turn.

3.11.2.1 Question Order

Brace (2004) recommends that a questionnaire should start with general topics and progress to more specific areas. This approach attempts to counter response bias (where early specific questioning can sensitise respondents to later more general topics) and also enable the respondent to “ease into the subject” and thus improve recall (Brace 2004: 49). Questions should be ordered within each module to prevent biased response, inconsistency and contradiction and to facilitate mental processing and answer recall (Oppenheim 1992, Rogelberg and Luong 2008,). However, ultimately, pilot work and the requirements of the study determine question and module order (Oppenheim 1992).

The Phase 2 survey utilised a funnel design (Oppenheim 1992, Malhotra and Birks 1999), starting with general questions before focusing to capture specific data on expectations of bank web site performance. Consideration was given to the

positioning of the request for personal information due to its sensitivity. In this preliminary paper-based study limited personal information (gender and age) was requested in the first section of the questionnaire both as an easy introduction to the instrument and also to facilitate any demographic patterns of non-response.

3.11.2.2 Question Design

Fowler (2002) states that a good question will be “written fully to prepare a respondent to answer”, will mean the same thing to every respondent and will not have awkward or confusing wording. Thus care was taken to avoid known types of poor question wording including use of double-barrelled questions, excessive length, use of leading questions, use of specialised language and failure to include don’t know and not-applicable options (Oppenheim 1992).

Questions can be broadly categorised as either open or closed (Oppenheim 1992). Open-ended questions do not offer any form of pre-set response and allow respondents to answer in their own words (Chisnall 2001). Closed-ended questions offer respondents a predetermined set of responses from which to choose a response that corresponds with their views (Chisnall 2001). Closed questions are easier and quicker to answer and responses are easier to quantify. Since the aim of the research was the quantification of response, the majority of the questions were closed-ended. The disadvantages of closed-ended questions are the loss of spontaneity, the introduction of bias by “forcing” a choice on respondents and a loss of rapport if the given options fail to reflect respondents’ opinions (Oppenheim 1992). Several steps were taken to minimise these problems for example focus group research was used to generate a range of opinions, an open-ended response box for “other” was included in item lists and options to give a response of “don’t know” were provided (Oppenheim 1992).

3.11.3 Instrument Piloting

The Phase 2 survey was pre-tested using 18 students randomly recruited through on-campus advertising and as a result several changes were made. The Likert scale was reduced from 7 to 5 points due to respondents reporting answer fatigue, all scale points were labelled and there were minor alterations to the wording of some

statements to improve clarity. The time taken to complete the questionnaire was measured to ensure that it could be completed within 10-15 minutes.

3.11.4 Instrument Administration

A paper-based survey was distributed in Business Studies tutorials at the University of Edinburgh in May 2001. Care was taken not to reduce teaching time; the questionnaire was distributed whilst students waited for classmates to arrive and students were instructed to keep incomplete questionnaires for completion outside of the classroom. E-mail distribution was rejected since focus group findings from Phase 1 indicated that unsolicited e-mails were viewed negatively and with suspicion. Thus it was felt that this method would not be effective when using a student sample. Intercept and telephone methods were rejected since it was felt these would not deliver the necessary volume or quality of response. For example, it is not possible to show material when using a telephone survey, this requires respondents to “hold response options in their heads” (Brace 2004: 34). Thus it was felt that given survey length and section repetition that this would cognitively overload participants and reduce the quality of response. Similarly the intercept method was rejected due to the length and complexity of the instrument plus the additional consideration that the presence of an interviewer might introduce bias (Brace 2004).

3.11.4.1 Action to Promote Response

Non-response was a concern due to the research topic. For example a study into consumer purchase of financial services by Howcroft et al (2003) resulted in a low usable response of 7.55%. They note that “consumers appear to be intrinsically uninterested in financial affairs and their attitude can be perhaps best described as passive or apathetic” (p70). Thus a £50 cash prize was offered as an incentive for completion of the questionnaire. It was debated whether an incentive would cause response bias (Chisnall 1997) however since this method of administration did not permit reminders it was felt the use of incentives was justified in order to ensure a sufficient response.

3.11.5 Data Analysis

This section begins by discussing the research choices for the analysis of Likert scale data and the convenience sample before proceeding to outlining the data analysis process. The choice of whether to use parametric or non-parametric statistical techniques is influenced by the measurement level of data and the sampling strategy (Stevens 1946, Chisnall 2001, Fowler 2002).

The term *parameter* refers to a measure which describes the distribution of the population such as the mean or variance. Since parametric tests are based on the assumption that we know certain characteristics of the population from which the sample is drawn, they are called parametric tests. *Non-parametric or distribution-free tests* are so named because they do not depend on assumptions about the precise form of distribution of the sampled populations. (Bryman and Cramer 2001:115 original italics)

The conditions for parametric tests are that the measurement scale should be interval or ratio, that the distribution of the population scores should be normal and the variance of both variables are homogenous, although “the need for these conditions has been strongly questioned” (Bryman and Cramer 2001: 115). Chisnall (2001:215) argues that a Likert scale “does not produce an interval scale and it would not be correct to reach any conclusions about the meaning of distances between scale positions”. However Lord (1953) suggests that these tests apply to numbers and not to what the numbers signify, therefore ordinal data can be treated as interval. In common practice these questions are almost always treated as interval especially in marketing research. (Remenyi et al 1998). Thus for the purposes of this thesis Likert data is treated as interval level data and parametric testing is used.

Convenience sampling is a non-random or purposive technique and thus, as noted in section 3.10.2, limits the generalisability of findings since the chance of selection is unequal (Robson 1993). Thus strictly speaking, it is appropriate to use non-parametric or distribution-free statistical analysis (Blaikie 2003). However, studies indicate that results from populations that violate distribution and variance conditions do not differ from those that meet these conditions particularly where the sample size is greater than fifty (for example Boneau 1960). Malthouse (2001: 112) note that parametric approaches are predominantly used by marketing scientists and are

“very well suited to the problems in the field”. Therefore it was considered appropriate to use parametric testing but to acknowledge that the limitations with regards to generalisation of the findings to a wider population. The position of not attempting generalisations beyond the immediate context of the investigation is consistent with the scientific realist philosophy of the researcher.

3.11.5.1 Data Analysis Process

SPSS V14 was used to analyse the results of the surveys in both Phase 2 and Phase 3. In Phase 2 data analysis was undertaken in four stages. The results of this analysis are reported in Chapter 4. First the data was examined for sufficiency of response and accuracy of data inputting. In the second stage frequency analysis was used to summarise data in order to detect patterns and tendencies using frequency distributions, measures of central tendency and measures of dispersion (Bryman and Cramer 2001).

The descriptive analysis examined the composition of the sample in terms of age, gender, banking behaviour, Internet behaviour and financial knowledge. For categorical variables (gender, shopped online, banked online and ever visited a bank web site) the mode was used as the test of central tendency and dispersion was examined using frequency tables. For ordinal variables (year of study, Internet experience, hours spent online) the test for central tendency was the mode and frequency tables were used to examine dispersion. For age, which was an interval level measure, two tests of central tendency were used the mean and the median (to account for outliers) and standard deviation was used to examine dispersion (Appendix IX).

The final two stages of the analysis addressed the research questions (Table 3.3). Appendix VI contains an explanation of each analysis technique, the data requirements and the underlying assumptions. The ranking for attributes in terms of importance was calculated as a weighted sum. Exploratory factor analysis was used to explore whether responses could be grouped into meaningful evaluative criteria. If the factors found were meaningful these dimensions could then be compared to constructs in online banking research. Oliver (1996) recommends that greater

specificity is more appropriate at the early exploratory phase of a research study and that in later stages techniques such as factor analysis can be used to reduce the feature dimensionality and increase the level of abstraction as needed. Thus exploratory factor analysis was used to aggregate the expectations items into a parsimonious range of constructs to enable exploration of differences amongst sub-groups.

Various tests were used to explore differences in expectations. Differences according to gender and online experience were explored using t-tests for two-unrelated means. Differences according to hours spent online and Internet experience were explored using ANOVA and post-hoc t-tests. The relationship between product experience and expectation was explored through correlation analysis.

Table 3.3 Research Questions and Analysis Technique

Research Question	Variables Under Consideration	Level of Measurement	Analysis
Can normative expectations for information search be grouped into meaningful explanatory factors?	- Bank web site expectations	Likert scale treated as interval	Exploratory Factor Analysis Cronbach's Alpha
Are there differences in response according to socio-demographic variables?	- Gender & Factor scores	Categorical & Interval	T-test for unrelated means
	- Age & Factor scores	Interval & Interval	Correlation Analysis
Are there differences in response according to previous online experience?	- Shops online & Factor Scores	Categorical & Interval	T-test for unrelated means
	- Banks online & Factor scores		
	- Web site visitor & Factor scores	Ordinal & Interval	ANOVA + post-hoc t-tests
Are there differences in response according to product knowledge?	- Hours spent online & Factor Scores	Interval & Interval	Correlation Analysis
	- Experience of Internet (Year of adoption) & Factor Scores	Ordinal & Interval	ANOVA + post-hoc t-tests

3.11.6 Ethical Considerations

As discussed in section 3.10.4, detailed consideration was given to the recruitment of student participants. As discussed in section 3.11.4, care was taken not to reduce teaching time to the detriment of the participants. Furthermore the timing of the survey was at a later stage of the semester and it was ascertained that students were not being disadvantaged academically by teaching time being used for data

collection. Measures were taken to ensure security and anonymity of response. For example, surveys were held in locked premises and any identifying information, such as prize draw entries, were held separately from the survey data. All responses were coded and reported anonymously.

3.12 Aim and Scope of Phase 3

The main study develops the findings of the preliminary research in Phases 1 and 2. It gathers data from Internet users of their expectations of a bank web site for two task scenarios rather than focusing solely on information search. The literature review discussed how expectations underpin attitudinal models that utilise concepts of satisfaction and service quality within the ED perspective. Phase 3 employs normative expectations as a referent to account for no prior experience of a bank web site. The questionnaire was designed to address the following research questions:

- To what extent do normative expectations of bank web site attributes differ for information search and account access tasks?
- Are there areas of poor “fit” between normative and predictive expectation?
- Do instances of expectation “fit” differ according to task scenario?
- Can differences in expectation fit be grouped by response into meaningful explanatory factors that indicate the presence of different evaluative dimensions for each task?
- Are there any differences in “fit” evaluation for each online task according to a range of socio-demographic, attitudinal and behavioural characteristics? Specifically: Internet-related behaviour and attitude, product-related behaviour, product-related attitude and online banking behaviour.
- What is the relationship between expectation fit and perceptions of task-specific risk?
- What is the relationship between the degree of expectation fit and task-specific intention to use a bank web site?

- What is the relationship between expectation fit and the extent, nature and duration of bank web site use?

Consideration was given to the calculation of expectation fit. As discussed in Section 2.23 the literature review identified that the UI and the ED perspective require a consumer to have used a web site. It was concluded that there is a need to develop an approach to explore both user and non-user web site evaluation in order to deepen understanding of the influences on subsequent adoption behaviour. It was proposed to explore the fit between predictive and normative expectations and how this gap or “fit” between expectation levels influence behaviour. Hence this thesis is adopting an approach suggested by Sirgy (1984) that views predictive expectations as a referent state. Thus in order to derive an expectation fit score normative expectations (NE) will be subtracted from predictive expectations (PE). Thus:

$$\text{PE (what will be present) - NE (what should be present) = Expectation Fit Score}$$

This approach is informed by early research conducted by Parasuraman et al (1988) into the development of SERVQUAL. In this instance “for each item a difference score Q (representing perceived quality along that item) was defined as $Q = P - E$, where P and E are the ratings on the corresponding perception and expectation statements, respectively” (Parasuraman et al 1988:19). The researchers then proceed to conduct exploratory factor analysis using the difference scores to determine the underlying constructs that contribute towards an overall evaluation of service quality. The authors note that this approach has been used previously within other disciplines. In the context of this research this approach is consistent with the ED research perspective that has been used widely within online banking research.

It is acknowledged that the use of difference scores has proved problematical and that the use of difference scores has lead to criticism of the SERVQUAL instrument as being unreliable (Cronin and Taylor 1992, Teas 1994). However Zeithaml et al (1996: 40) note that “a difference-score measure is appropriate if the primary purpose is to diagnose accurately...shortfalls”. Thus this approach was felt to be appropriate to diagnose the shortfalls between desired and predicted web site attributes.

3.12.1 Questionnaire Content

The questionnaire contained several sections. Section One contained questions on current banking behaviour in terms of most frequently used banking method and current account involvement. This section also operated as a filter and routed those without a current account and those whose bank did not have an online presence to the final section of the questionnaire.

Section Two captured information on bank web site use including whether a visit had been made, the year of the first visit, the frequency that information seeking and account access tasks had been undertaken, the intention of a future visit and the likelihood of a future visit according to task scenario. This section also measured the degree of risk associated with using a bank web site for each task.

Sections Three, Four and Five of the questionnaire asked about respondent expectations of web site attributes, each module contained a 14 item battery which was repeated once for predictive expectations and twice for normative expectations across the two task scenarios.

Section Six requested information on Internet use including frequency of use for information search and account purchase, the year of first use of the Internet, whether the participant had broadband access at home, and the degree of Internet involvement.

Section Seven requested personal information including gender, age, household income and educational attainment. This section also captured information on understanding and ability for both Internet and current account use. The following sub-sections discuss in greater detail each section of the questionnaire.

3.12.1.1 Section One: Current Account Behaviour

Section One contained questions on whether the most frequently used banking method was branch, telephone or Internet and the levels of participants' current account involvement. This section was used as a filter to screen respondents to ensure that they belonged to the population of interest. Hence, those who did not have a current account or whose bank did not have a web site were routed to section seven of the questionnaire.

Involvement is defined as “ a person's perceived relevance of the object based on inherent needs, values and interests” (Zaichkowsky 1985: 342). Involvement can differ according target object for a specific individual and also between individuals for the same target object (Zaichkowsky 1986). Research indicates that involvement influences behaviour towards a particular outcome. For example, high levels of product involvement can result in an increased perception of the level and range of attributes (Gensch and Javalgi 1987, Celsi and Olson 1988). In addition those with greater product category involvement have been shown to undertake ongoing information search activity (Petty et al 1983, Bloch et al 1986, Beatty and Smith 1987).

Involvement can either be “situational” or “enduring” (Houston and Rothschild 1978, Richins and Bloch 1986). Situational involvement is context specific (i.e. at the time of a transaction) and subsides after the event has occurred. In contrast, enduring involvement is considered a stable baseline state that is independent of purchase situations it “represents an ongoing concern with a product that transcends situational influences” (Richins and Bloch 1986: 280). Research has shown that situational and enduring involvement are distinct constructs and do not interact but combine additively to influence involvement outcomes i.e. consumers with high enduring involvement will have high situational involvement when transacting (Richins et al 1992). Given that enduring involvement has implications in terms of information search behaviour (Richins and Bloch 1986) it was decided to focus on measuring this construct in the context of the current account.

Zaichkowsky (1985) developed an inventory of items to measure enduring involvement for a given object. The Personal Involvement Inventory (PII) was developed and tested on a wide number of products and services (Zaichkowsky 1985). The original PII is a 20-item bi-polar adjective scale and the respondent is asked to indicate where his/her feelings lie using a 7-point scale between adjectives. In response to criticisms that the original PII was too long for repeated testing and that some items were redundant (Foxall and Pallister 1998) the number of items were reduced to 10 and in addition these were divided into two sub-scales that measured cognitive and affective involvement (Zaichkowsky 1986). The 10-item scale was used in a pilot of the Phase 3 study however participants reported response fatigue. In the context of financial services Foxall and Pallister (1998) used the reduced PII scale to measure involvement and found that cognitive involvement was more dominant than affective involvement, thus the decision was taken to use the five item sub-scale for cognitive involvement in this study as published in Bearden and Netemeyer (1999) (Table 3.4).

Table 3.4 Current Account Involvement

Please indicate, on the following scale, how you feel about your current account

In my opinion my current account (is):

Important	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unimportant
Means a lot to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Means nothing to me
Matters to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Does not matter to me
Significant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Insignificant
Of no concern to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Of concern to me

3.12.1.2 Section Two: Bank Web Site Behaviour

Section Two asked whether participants had ever visited their bank web site requiring a dichotomous Yes/No response. The choice of the participant's bank web site was made since it was felt that that some participants would focus on this specific attitude object even if the question was framed in more general terms.

Participants who had visited their bank’s web site were then asked to give the year of their first visit, this measure was used as an indication of the extent of participant experience of their bank’s web site. It should be noted that this question does not take into account those who may have visited their bank’s web site at an earlier date and then did not continue with use. However in an attempt to address this limitation respondents were asked to indicate the frequency with which they used their bank’s web site for information search and account access in the last 12 months. Task frequency was measured using an ordinal scale with pre-set response categories (Table 3.5).

Table 3.5 Frequency of Bank Web Site Use

Approximately, how many times in the last 12 months have use visited your bank’s web site for each of the following?

Please choose the appropriate response for each item

	Not at all	1-3 times	4-6 times	7-9 times	10-12 times	More than 12 times
To access your current account	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To search for information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Participants who had not visited their bank’s web site were routed to questions that asked if they intended to visit their bank’s web site in future. This question was also asked of those who had visited their bank’s web site previously. Gathering information on behavioural intention is theoretically supported by the Theory of Reasoned Action and by empirical evidence of a strong and significant relationship between behavioural intention and actual behaviour (Sheppard et al 1988, Mathieson 1991). Overall intention is indicated using a Yes/No. Those who said that they intended to visit were asked to indicate the likelihood of undertaking each task since Fishbein and Ajzen (1975) propose that intention should be treated as a form of belief and therefore the strength of intention should be measured (Table 3.6).

Table 3.6 Likelihood of Bank Web Site Visit

How likely are you in the next 12 months, to use your bank's web site for each of the following?

Please choose the appropriate response for each item

	Extremely likely	Likely	No Opinion	Unlikely	Extremely Unlikely
To access your current account	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To search for information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All participants (whether they were visitors to their bank's web site or not) were asked to give their perceptions of risk for each task scenario. It was decided to measure perceptions of risk rather than attempt a measure of objective risk. Mitchell (1999: 164) outlines the debate in the literature of the extent to which objective risk exists and concludes:

Even if the consumer could calculate accurately the risk involved, it is not this objective risk which motivates behaviour, but the consumer's subjective impressions of it

Furthermore Mitchell (1991: 165) asserts that utilising a subjective measurement of risk is consistent with the philosophical perspective of scientific realism since scientific realists

concede that the subjective impressions of an observable phenomenon are worth conceptualizing and measuringAn objective measure of risk is therefore difficult to obtain, but that is not to say that it does not exist. All that can be easily measured is the subjective or perceived risk.

Semantic differential scaling was used to measure perceptions of online banking risk (Osgood et al 1957). A semantic scale "consists of a number of ... rating scales that are bipolar with each extreme defined by an adjective or adjectival phrase" and "respondents rate each of a number of objects or concepts along a continuum" (Chisnall 2001: 219). A five-point rating scale was used in order to facilitate response and limit respondent fatigue, whilst seven-point scales have been shown to

be optimal, five or three-point scales can be used (Oppenheim 1992). The advantages of a semantic rating scale is that there is no need for individual scale points to be identified and this approach also attempts “to reduce bias towards agreeing with a statement since both ends of the scale have to be considered” (Brace 2004: 89). However care must be taken to ensure that statements are appropriate and that opposites are correctly identified to avoid confusion (Oppenheim 1992, Chisnall 2001, Brace 2004)

Section 2.11.1.1 outlined how risk has been conceptualised as comprising of six distinct components financial, performance, physical, social, psychological and convenience. However in terms of Internet research five components of risk (financial, performance, psychological, physical and temporal) have been identified as being most prevalent amongst Internet users (Forsythe and Shi 2003). Social risk has been not identified as an influence in online banking research (Littler and Melanthiou 2006). Thus a five-item scale was developed based on prior research (Table 3.7).

An explicit comparison standard was given since Van Riel et al (2001: 364) note that service evaluations can be impacted by the choice of comparison standard. They state that when evaluating self-service technology customers appear to use experience-based norms based on traditional services as comparison standards. Thus in this study participants were asked to give their perceptions of risk for using online banking compared to other banking methods (Table 3.8). The example given is for information search: a separate battery was used for current account access risk

Table 3.7 Risk Components and Constructs

Risk Component	Definition	Online Illustration	Construct	Prior Research
Financial Risk	The likelihood of suffering a financial loss due to hidden costs, maintenance costs or lack of warranty in the case of faults.	Cost of Internet connection. Cost of equipment Cost of service or product	Costly to use	Curran & Meuter (2005), Tan & Teo (2000).
Performance Risk	The chances of the item failing to meet the performance requirements originally intended for the purchase	Delivery failure Equipment failure User/Provider mistake	Inaccurate	Suh & Han (2003), Gerrard & Cunningham (2003)
Physical Risk	The probability of the purchase resulting in physical harm or injury	Exposure to theft or fraud Invasion of privacy	Not secure	Brown et al (2007) Montoya-Weiss et al (2003).
Psychological Risk	The chances of the specific purchase being inconsistent with the personal or self-image of the consumer.	Cognitive effort required for activity	Difficult to use	Black et al (2001), Lee et al (2005), Littler & Melanthiou (2006)
Convenience Risk	The probability of the purchase resulting in lost time in terms of delivery, fitting or customisation, or in repair/down-time.	Time needed to undertake activity.	Slow to use	Black et al (2001), Lichtenstein & Williamson (2006).

Adapted from: Pires et al (2004).

Table 3.8 Perceptions of Task Specific Risk

How do you feel about using online banking compared to other banking methods, if you were to use a bank's web site to SEARCH FOR INFORMATION? Please choose the appropriate response for each item

Easy to use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Difficult to use
Quick to use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Slow to use
Cheap to use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Costly to use
Secure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Not Secure
Accurate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Inaccurate

3.12.1.3 Sections Three–Five: Web Site Expectations

Sections Three, Four and Five contained three batteries of 14 web site attributes (Table 3.9). Participants were asked to indicate the extent to which they agreed that each attribute would be present if they were to visit their bank's web site. They were then asked to indicate the extent to which they agreed each item should be present if they were to visit their bank's web site for information search and then if they agreed each item should be present for account access.

Wilkie and Pessemier (1973: 432) identify that attribute specification is an area of weakness in multi-attribute research. They note that considerations include: parsimony, saliency and a need for predictive efficiency". However "all researchers agree that only salient attributes should be included" and that attributes that are perceived to be present by consumers should be used rather than objective product constructs (p 432).

Methods to elicit attributes salient to consumers include the use of qualitative data gathering and the use of prior studies (Wilkie and Pessemier 1973). Thus an initial set of items was generated through literature search and focus groups in Phase 1. These initial items were then tested in the quantitative stage in Phase 2 and reduced using exploratory factor analysis. Results were then compared to other published measures to establish validity and discrimination. The stages of data collection and analysis that were undertaken to develop this refined set of 14 items are reported in Chapter 4. Table 3.10 lists the items used in Phase 3

Table 3.9 Phase III Bank Web Site Attributes

Imagine that you are going to visit your bank's web site just to ACCESS YOUR ACCOUNT, What should be on the web site to give you excellent service for this task? Please choose the appropriate response for each item.

To give me excellent service when accessing my account my bank's webs site should:

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
Have moving graphics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have a search engine for in-site search	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Require a username/password	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Be quick to download where I usually access the Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Offer a secure connection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Allow me to send an e-mail to my bank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Confirm to me by e-mail that a function has been performed correctly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have the facility to experiment with online banking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have company information about my bank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Help me learn more about financial services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have information about how to make a complaint	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details about competitors' rates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details about my bank's own rates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have details about how my account should work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.12.1.4 Section Six: Internet Behaviour

Section Six gathered information on Internet behaviour. This section asked respondents to indicate the frequency of their Internet use both overall and for search and purchasing activity. This activity was measured using an ordinal scale with categories drawn from the British Social Attitudes Survey (2003) (Table 3.10). The example given is for online purchase and information search activity: a separate battery was used for Internet access. In addition participants were asked to give the year that they first used the Internet and to indicate if they had broadband access at home and were required to give a dichotomous Yes/No response.

Table 3.10 Nature of Internet Use

Approximately, how often have you used the Internet for each of the following activities in the last 12 months? Please choose the appropriate response for each item

	Every day	Several times a week	Once a week	1-3 times a month	1-6 times a year	Not at all
To search for information about goods and services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To purchase goods and services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section Six also measured channel involvement. There has been limited attention given to retail channel involvement (Michaelidou et al 2004). However research has examined other targets of involvement including: products (Howard and Sheth, 1969, Zaichkowsky 1985); advertisements (Krugman, 1965, Greenwald and Leavitt 1984) and the purchase task (Clarke and Belk, 1979, Mittal 1989). One study by Swinyard (1993) examines the influence of situational involvement on shopping intentions using an experimental design and a retail setting however no studies have been identified that seek to examine enduring involvement with a distribution channel and in particular with the Internet.

In terms of IS research there has been some attempt to examine the construct of user-involvement towards the technology but this has been conceptualised as

“participation in the system development process” (Barki and Hartwick 1989: 53). Thus the focus of empirical research within the IS discipline has been on measuring the interaction between developers and end-users (Baroudi et al 1986, Franz and Robey 1986). Hence research on the attitude of the user towards the technology is under-developed and offers limited validated measures (Klenke 1992, Barki and Hartwick 1994).

Kappelman (1995: 65) argues that “motivational state of involvement towards an innovation could markedly affect the outcomes of its diffusion”. Thus it can be argued that Internet involvement is worthy of investigation however the researcher has found limited research into Internet involvement. King and Liou (2004) note various attempts to measure emotional involvement which they define as “the extent to which the user becomes emotionally involved through interacting with the web site” (p 481). These studies focus on single affective responses such as attractiveness (i.e. Ilfeld and Winer 2002) and playfulness (i.e. Ahn et al 2007) and thus do not offer a unified approach towards the subject. One such approach is the measurement of “flow” which is defined as “the holistic experience that people feel when they act with total involvement” (Csikszentmihalyi 1975: 6). Several authors have examined the concept of flow in relation to Internet adoption and in particular its influence on the duration and repetition of web site visits (Rettie 2001). The concept of flow can be compared to situational involvement in that it is event and time specific and thus is not an enduring response. Thus the impact of enduring involvement is a little investigated phenomenon in relation to the Internet.

There is evidence that Internet and product involvement positively influence Internet use. In the only study identified into Internet involvement Kwak et al (2002) examine its influences on purchase behaviour finding that Internet involvement is positively related to Internet purchase behaviour. Unfortunately this study does not use a validated measure but uses two items to gather information on participant interest in the Internet and frequency of thinking about the Internet. Several studies were identified that examine how product involvement influences online behaviour (Koufaris et al. 2001, Koufaris 2002). In terms of online banking McKechnie et al (2006) found that product category involvement was positively related to perceptions

of web site “ease of use”. Black et al (2001) found that increased product category involvement was related to increased use of online banking. However no study was identified that compared the influence of product and channel involvement. Thus this study used the 5-item PII scale to gather responses of cognitive enduring involvement for the Internet (Table 3.11).

Table 3.11 Internet Involvement

Please indicate, on the following scale, how you feel about the Internet

In my opinion the Internet (is):

Important	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Unimportant
Means a lot to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Means nothing to me
Matters to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Does not matter to me
Significant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Insignificant
Of no concern to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Of concern to me

3.12.1.5 Section Seven: About You

Section seven was the final section of the questionnaire and captured demographic information although the online banking literature findings are inconclusive on the impact of key socio-demographic characteristics. Table 3.12 shows where studies drawn from a population of Internet users have shown support for the influence of socio-demographic characteristics on online banking adoption.

For each of these questions respondents were given the option of indicating that they “did not wish to say”. Shoemaker et al (2002) find that non response is greater for sensitive question and thus by providing a “don’t wish to say” option this research aimed to encourage survey completion.

Table 3.12 Summary of Previous and Measurement used in Current Survey

Item	Support in Prior Studies	Form of measurement
Gender	Karjaluoto et al (2002), Maenpaa (2006), Floh and Treiblmaier (2006)	M/F
Age	Karjaluoto et al (2002), Maenpaa (2006), Floh and Treiblmaier (2006)	16-24, 25-34, 35-44, 45-54, 55-64, 65+,
Educational Attainment	Maenpaa (2006), Smith (2006), Yiu et al (2007),	GCSE or equivalent, A Level or equivalent, Diploma, Undergraduate Degree, Postgraduate Degree, None,
Income	Lassar et al (2005), Yiu et al (2007), Maenpaa (2006), Eriksson & Nilsson (2007)	Under £9,999, then in £10,000 bands until £60,000 or more

Section seven of the questionnaire also collected information on product and channel ability and understanding using self-reported measures. As discussed in sub-section 3.11.1.1. Park and Lessig (1981) propose that self-reported knowledge provides a better understanding of participant bias and heuristics than objective measures (Table 3.13).

Table 3.13 Measures of Product and Channel Understanding and Ability

Please indicate how you would rate yourself in relation to each of the following. Please choose the appropriate response for each item

	Good	Better than average	Average	Less than Average	Poor
My understanding of the Internet is	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My ability to use the Internet is	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My understanding of a current account is	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My ability to manage a current account is	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.12.2 Questionnaire Design

3.12.2.1 Question Order

Phase 3 utilised a funnel design, with a focus on general topics before focusing on expectations of web site attributes. Compared to Phase 2, the Phase 3 instrument required a wider range of personal information. One concern would be that some

participants might drop out of the study at this point resulting in low internal validity (Birnbaum 2004). Thus this section was placed at the end of the questionnaire, so the majority of the questions would already have been answered. In addition this section was preceded with a short rationale for its inclusion that stressed the value of personal information to the analysis. This order was chosen in order to minimise any perceptions of intrusiveness that might be off-putting (Oppenheim 1992). This was of particular concern due to news reports of misuse of online personal information (Toyne 2003).

3.12.2.2 Question Design

Care was taken to ensure that question wording was clear and understandable. Given the heterogeneous nature of the population to be sampled, attention was given when composing questions that aimed to measure periodic behaviour to ensure that terms communicated to the respondent the format of the answer (Fowler 2002). For example a question asking “How long have you been using the Internet?” could engender many different responses since it does not indicate to the respondent any form of measurement, equally a finite list might not capture extremes of behaviour. Thus an open-ended question was used and phrased as “Approximately in which year did you first use the Internet?” In addition a larger text box was included to capture any additional comments from the respondents at the end of the questionnaire.

When using an online questionnaire there are a variety of online response mechanisms for closed-ended questions (Best and Kreuger 2004):

1. Text-input fields where subjects place an “X” or a numerical value in an input field.
2. Pull-down menus where the respondent clicks on a menu to reveal the range of response options and then scrolls down to select a response.
3. Click tags where all choices are displayed and the respondent clicks on the required choice. These come in two formats: radio buttons which permit only one option to be selected or check boxes which can record multiple responses.

4. Slider Bars where the participant can move a bar along a scale until it aligns with a preferred response.

The key considerations in the choice of mechanism were ease of response and reduction of response error. This study used a combination of radio buttons and check boxes according to the requirements of the question. Research has shown that radio buttons produce faster completion, faster response and less item non-response when compared to slider bars and text input fields (Cook et al 2001, Arnau et al 2001, Best and Kreuger 2004).

3.12.3 Instrument Piloting

The Phase 3 survey was first developed as a paper-based survey and distributed by post. This approach allowed the researcher to access participants with a range of Internet experience and access and also permitted respondents to record their comments next to the relevant sections of the questionnaire. The survey was piloted with a convenience sample of 160 adults of various ages and Internet experience.

A total of 50 usable questionnaires were returned given a response rate of 35%. Various comments and suggestions for improvement were made and a number of typographical errors were identified and corrected. In addition comments were made on specific questions. One question asking about current banking behaviour had specified originally mobile banking as a banking method, however several respondents queried how this was different from telephone banking so this option was dropped. There were several emphatic appeals for the rating scales to keep the same direction throughout the questionnaire i.e. low indicators on the left and high indicators on the right.

The second stage of testing the revised survey was converted to web-based format. Miller and Dickson (2001: 148) detail several technical challenges beyond the control of the researcher, such as slow response time due to heavy web site traffic or insufficient bandwidth on the respondents' machine, and changes in display due to different configurations of the respondents' computer. These factors may result in appearance of web-based surveys varying according to browser, screen size and

screen resolution. For example Tan and Teo (2000) found that their sample was compromised due to the incompatibility of their questionnaire with the browser Microsoft Internet Explorer 4.0. Therefore 20 invited users completed the online survey on various different machines in order to test the robustness across different browser configurations (Hewson et al 2003). After this round of testing was completed it was felt that the survey was ready for distribution.

3.12.4 Instrument Administration

The population of interest for this research are Internet users who own a bank account. The main study selected an online questionnaire as an appropriate instrument with which to capture data from a sample of Internet users (Tan and Teo 2000). Postal administration was rejected because of cost and problems in obtaining a sample of Internet user postal addresses. Online surveys have several strengths including: reach, flexibility, speed, control, low costs and the ability to deliver quality and quantity of data (Evans and Mathur 2005). Duffy et al (2005) argue that online data collection promotes response by being more convenient for respondents.

Distribution of the invitation e-mail for the main study took place in October 2005. It was decided to choose an autumn date since Ilieva et al (2002) note that surveys conducted in the summer months can suffer from lower response due to holiday absence. It was also decided to schedule the survey for mid-week to avoid both the backlog of e-mail that can reside in accounts after a weekend and any absences from work on Fridays by participants undertaking weekend travel.

There is great difficulty in generating a random sample of Internet users. There is no comprehensive directory of e-mail addresses and it is not possible to randomly generate e-mail addresses “because they do not adhere to a standard length or format like a telephone number” (Best and Kreuger 2004:16). Thus it was necessary to purchase e-mail addresses. Main study participants were recruited by e-mail using a permission-based “I-points” list administered by a commercial list broker (Avongate).

I-points members indicate their willingness to take part in research and earn points, which they can redeem for prizes, in return for each survey response. The scheme was founded in 1997 and has 2.5 million members. Previous academic research indicated that this sampling frame would deliver good response quantity and quality (Harridge-March and Quinton 2005, Argyriou et al 2005).

Extant research indicated that age and gender are both significant variables that influence Internet use (Ilieva et al 2002). The purchased sampling frame did not reflect the proportions, in terms of age and gender of UK Internet users and thus it was felt that a stratified random sampling strategy would generate a more diverse sample. With this technique a population is divided into groups or strata using variables which are relevant to the research issues (Bryman and Cramer 2001). According to Haack (1979: 123) “ a sample is then taken from each stratum, ensuring that each stratum is represented in the overall sample”, and so attempts to overcome any tendency to over or under represent groups of interest to the research.

Haack (1979) identifies two types of stratification: pre-stratification where the population is stratified before data is collected and post stratification where the sample is divided into strata which are then re-sampled or weighted. This research used pre-stratification to construct a sample. Pre-stratification was possible since information was available from the Office of National Statistics (National Statistics 2005) on the population of interest and also advisable given the exploratory nature of the study. Stratification occurred in two stages, which resulted in four strata. The sample was first constructed by randomly selecting, without replacement, participants according to gender and then selecting within gender randomly according to age.

3.12.4.1 Action to Promote Response

Whilst online surveys are a low cost method of distribution, response rates are variable and may be 10% or lower (e.g. Patrick et al 1995). Ilieva et al (2002) compiled a table of response rates of surveys using email and mail methods. Table 3.14 has been adapted so that the studies are listed temporally and this indicates that

there is a downward trend in response to e-mail surveys and that on average online distribution has a lower response rate to postal surveys.

Lack of topic saliency is one factor leading to low response in surveys and a weak relationship between the participant and the web site or brand may reduce participation (Comley 2000). In order to increase saliency this study emphasised its link with the University of Edinburgh, both in the e-mail invitation and on the survey home page. In addition a domain name was purchased which reflected the provenance of the study (www.uoebankingsurvey.org.uk).

Table 3.14 Response Rates of Surveys Using E-mail and Mail

Authors	E-Mail Response Rate %	Mail Response Rate%
Kiesler & Sproull (1986)	75	67
Parker (1992)	68	38
Schuldt & Totten (1994)	19	57
Mehta & Sivasdas (1995)	54	57
Tse et al (1995)	58	58
Bachman et al (1996)	53	66
Weible & Wallace (1998)	30	38
Wygant & Lindorf (1999)	50	32
Ranchod & Zhou (2001)	3	20
Average Response Rate	39	46

Adapted from Ilieva et al (2002: 367) who expanded upon Sheehan and McMillan (1999:51)

Miller and Dickson (2001: 141) state that “the survey should state... who is conducting the survey, how the research data will be used, and how long the survey should take.” Both the invitation e-mail and the survey home page stated the links with the University of Edinburgh, the aim of the research and provided links to the researcher’s own webpage. In addition the completion time for the survey was given based on respondent completion time in the pre-testing stage (Crawford et al 2001). It was considered supplying data about online banking behaviour would be a sensitive topic for participants and this would heighten concerns about anonymity if an e-mail method was used in isolation.

Progress indicators informed the respondent of the number of questions or time remaining before completion of the questionnaire. Pop-up missing data messages were discounted due to unfavourable responses in the preliminary study and reports

from other studies (Comely 2000). Due to ethical concerns continuation procedures to eliminate item non-response, such as making certain questions mandatory before displaying the next question were not used, (Miller and Dickson 2001, Evans and Mathur 2005).

The survey was designed using open-source software programme, PHP surveyor (<http://www.phpsurveyor.org/index.php>) to ensure a professional, robust and pleasing layout. Particular attention was given to ensure that the survey remained legible across a variety of screen configurations and this was tested in the pilot stage (Best and Kreuger 2004). Response scales were included with each item so that it would not be necessary for end users to scroll up and down if they wished to refer to scales (Witmer et al 1999). Efforts were made to avoid repetition and items were ordered logically so that the questionnaire did not appear trivial or boring (Witmer et al 1999, Ranchod and Zhou 2001).

Additional factors which can adversely affect response are a lack of anonymity, and absence of incentive (Ranchod and Zhou 2001). Witmer et al (1999) argue that for online surveys incentives are more critical than postal questionnaires due to the relative ease with which a respondent can dispose of the instrument. It was decided to provide i-points tokens to all respondents as recompense, the home page assured participants that their responses were confidential and would not be used for any commercial purpose. This study did not to ask for an e-mail address for follow-up communication or a raffle-based incentive to “further reinforce the assurance of anonymity” (Mueller et al 2000).

3.12.4.2 Action to Promote Validity and Reliability

The possibility of multiple submissions has received considerable attention as a threat to validity in web research (Birnbaum 2004). Table 3.15 summarises that various methods that can be used to detect multiple submissions and remove them from the data. These tactics address three participant motivations to submit multiple responses: perceptions that its better to participate more than once, a desire to receive multiple payments or incentives and pleasure in the data collection procedure.

Identifiers, IP addresses, passwords, cookies, CGI scripts and sub-sample follow up were rejected. Sub-sample follow up was rejected on the grounds of cost. There was also concern that participants could perceive the use of identifiers, IP addresses, passwords, cookies, CGI scripts as a threat to their anonymity. For example, Miller and Dickson (2001:153) note that cookies are regarded as “unnecessary and overly intrusive technology” and can be used to identify respondents. Internet users can switch off the cookie function on their machine and thus would be rejected by a survey requiring cookie submission. Given the sensitive nature of the research topic it was felt that any negative perceptions might increase non-response. Thus the tactics adopted by this research were to tell participants to participate only once, to remove incentives for people who participated more than once and to examine log-files for identical records.

Table 3.15 Avoiding or Detecting Multiple Submissions

Method	Tactic
Instructions	Tell people to participate only once
Remove Incentives	Rewards not available for those who participate more than once
Replace Incentive	Provide alternative site for repeated play
Use Identifiers	Common gateway interface (CGI) script allows only one submission; option: replace previous data or refusal to accept new
Use Identifiers	Filter data to remove repeats
Use Internet Protocol (IP), email address	Check for repeated IP addresses
Passwords	Allow participation by password only
Cookies	Check cookie for previous participation
CGI scripts	CGI checks for referring page and other features
Log file analysis	Can detect patters of requests
Sub-sample follow up	Contact participants to verify ID
Check for identical data records	Filter identical or nearly identical records

Source: Birnbaum (2004: 814)

3.12.5 Data Analysis Process

Data analysis was undertaken in five stages. The results of this analysis are reported in Chapter 5. In an approach consistent with Phase 2, stage one of the analysis examined the sufficiency of response and several procedures were used to explore the impact of missing data (Appendix VII). Computation of the scores for risk and involvement items and an examination of the validity and reliability of these measures were also undertaken within this phase of data analysis (Appendix VIII).

In the second stage the composition of the sample was examined in terms of socio-demographic characteristics and Internet-related characteristics, product-related characteristics and online banking behaviour (Appendix X).

The final three stages of the analysis addressed the research questions (Table 3.16). Stage three examined the variation in normative expectation according to task and examined the differences between normative and predictive expectation. At the conclusion of the third stage of the analysis the expectation fit scores were aggregated using exploratory factor analysis. The fourth stage of the analysis then explored differences in response according to individual, Internet-related and product-related characteristics and previous online-banking experience. The fifth stage of the analysis explored the relationship between the dimensions of expectation fit and task-specific risk and task-specific intention.

3.12.6 Ethical Considerations

Consideration was given to the recruitment of Phase 3 participants. A permission-based list was utilised in order to avoid breaches in “netiquette”, namely the code of acceptable online behaviour, such as spamming, that has been developed by the online community (Hewson et al 2003). Intercept advertisements can control sampling and generate a higher response (Cho, Lee and Tharp 2001, Best and Kreuger 2004). However intercept techniques have been linked to forcing participants to view the request and respond before being given access to destination web page (Comely 2000, Best and Krueger 2004). Coercion of this nature was considered unethical and rejected (Market Research Society 2006).

Attention was paid to ensuring that data was held securely. The Internet provides considerable scope for third party interception (Schmidt 1999, Hewson et al 2003). Online survey security can be compromised in terms of information availability (i.e. access to respondents’ identity and response data) or information integrity (i.e. changes made to responses and the research instrument). Password and user ID protected the administrative core of the Phase 3 survey. Data was protected by regular system back-ups to machines that required clearance for external access and

the use of software that had been proved robust under adverse conditions (Schmidt 1999, Hewson et al 2003). Finally data was checked regularly any unusual patterns.

Table 3.16 Research Questions and Analysis Technique

	Research Question	Variables Under Consideration	Level of Measurement	Analysis
Stage Three Analysis	To what extent do the normative expectations of a bank web site differ for information search and account access tasks?	- Normative Expectation for each task scenario	Interval & Interval	Mean ranking. T-tests for related means
	Are there areas of poor fit between normative and predictive expectation?	- Predictive Expectation & Normative Expectation for each task scenario	Interval & Interval	Mean ranking of Difference Scores
	Do instances of fit differ according to task scenario?	- Fit for information search - Fit for account access	Interval & Interval	T-tests for related means
	Can normative expectations for information search be grouped into meaningful explanatory factors?	- Bank web site expectations	Likert scale treated as interval	Exploratory Factor Analysis Cronbach's Alpha
Stage Four Analysis	Are there differences in response according to individual characteristics?	- Gender & Factor scores	Categorical & Interval	T-test for unrelated means
		- Education & Factor scores - Income & Factor scores - Age & Factor scores	Ordinal & Interval	ANOVA + post-hoc t-tests
		- Use frequency & Factor Scores - Experience & Factor scores	Ordinal & Interval Interval & Interval	ANOVA + post-hoc t-tests Correlation analysis
	Are there differences in expectation fit according to Internet connectivity?	- Broadband access & Factor scores &	Categorical & Interval	T-test for unrelated means
	Are there differences in response according to understanding, ability and involvement with channel/product?	- Ability & Factor scores - Understanding & Factor scores	Ordinal & Interval	ANOVA + post-hoc t-tests
		- Involvement & Factor scores	Interval & Interval	Correlation
	What is the relationship between expectation fit and extent, nature and duration of bank web site visit?	- Bank web site visitor & Factor scores	Interval & Categorical	T-test for unrelated means
		- Year of visit & Factor scores	Interval & Interval	Correlation
		- Frequency of task & Factor scores	Interval & ordinal	ANOVA + post-hoc t-tests
	Stage Five Analysis	What is the relationship between fit and task-specific intention to use a bank web site?	- Factor scores & Intention to Use	Interval & Categorical
What is the relationship between expectation fit and perceptions of task-specific risk?		- Factor scores & risk scores for information seeking and account access	Interval & Interval	Correlation Linear Regression

3.13 Section Summary

This section has provided an overview of the research activity at each of the research phases. It has been divided into three sub-sections that have detailed for each phase the research aim and questions, the data collection procedure and the data analysis techniques. Table 3.17 provides a summary of the research phases.

Table 3.17 Summary of Research Phases

	Phase 1	Phase 2	Phase 3
Aim	To develop an understanding of expectations of web site attributes for information search	To explore expectations of web site attributes for information search	To explore influences and differences for expectations across two task scenarios.
Method	Focus Groups	Self-completion class survey	Self-completion online survey
Data Type	Qualitative	Quantitative	Quantitative
Sample	Non probability convenience sample drawn from student population	Non-probability Convenience Sample drawn from student population	Probability random stratified sample drawn from a population of Internet users who subscribe to I-points list
Analysis	Thematic analysis using Grounded Theory	Frequencies Exploratory Factor Analysis Cronbach's Alpha T-Tests Chi-squared ANOVA Correlation	Frequencies Exploratory Factor Analysis Cronbach's alpha T-Tests ANOVA Correlation Linear regression Logistic regression

3.14 Chapter Conclusion

A number of limitations to the research design used in this study should be noted. First this research design is cross-sectional and thus presents a “static account” that fails to capture the complexity of consumer behaviour (Bryman 1988:101). Data on variables were simultaneously collected so that it is not possible to establish a time order of the variables in question. This means that there is limited capacity to explain the causal process of Internet banking adoption.

Second the research uses an Internet sample. Online data collection is often viewed as inherently biased; for example, Ilieva et al (2002: 362) note that “a sample of

respondents with Internet/email access may not be representative of certain populations”. Online samples are commonly described as having a demographic bias in terms of age and gender (Ilieva et al 2002). Research has identified behavioural and attitudinal biases. For example, Schillewaert and Meulesmeester (2005) find that an online sample were more extrovert and outgoing than those who responded using alternative methods. In addition, Duffy et al (2005: 620) report that online respondents “tend to be more politically active, more likely to be earlier adopters of technology, and tend to travel and eat out more than face-to-face respondents”.

However problems of bias are not confined solely to online methods. For example, Schillewaert and Meulemeester (2005) note that issues of coverage and bias are pertinent for other modes of data collection, since self-selection bias is true to some extent for all survey methods. They note that the trend towards mobile phone ownership has resulted in random digit dialling decreasing in adequacy for probability sampling. They conclude that “consequently, purely random samples are very hard to draw and researchers *always* need to be careful with the generalisability of results [original italics] (Schillewaert and Meulemeester 2005: 165).

There are arguments that the achieved samples in online surveys are more representative than traditional approaches. For example, online data collection reaches young male, busy professionals who “often repel or ignore cold callers but are willing to answer questions posted on their computer screen” (Kellner 2004 cited in Duffy et al 2005: 618). Schillewaert and Meulemeester (2005) argue that, for online populations, online data collection can generate representative results. However, contrary to this Birnbaum (2004: 820) argues that:

“It would be a mistake to treat data recruited from the Web as if they represented a sample of some stable population of “Web users”. The list of people with access to the Internet is expanding every day, and no method yet devised has been shown to reach those users in a random fashion”.

Third due to time and resource limitations several data collection techniques that have been shown to reduce bias were not implemented. For example, there was no follow-up request to non-respondents to participate in the survey (Chisnall 2001). In addition, automated prompts to encourage participants to complete items were not

implemented (Best and Kreuger 2004). Although online surveys facilitate randomisation of items within scale batteries and randomisation of scale direction these techniques were not employed. Finally due to researcher error the mechanism to time and date stamp replies was not activated and therefore only a manual check of response waves was possible.

Having detailed and accounted for the methodology for this research the next chapter will present the research findings of the preliminary research undertaken in Phases 1 and 2.

CHAPTER 4 PRELIMINARY RESEARCH

4.1 Chapter Introduction

This chapter reports on Phases 1 and 2 of the research. In the absence of a suitable body of literature to guide the research it is appropriate to commence with two exploratory studies. The preliminary research is designed to generate insight into online information seeking expectation. If the expectations held for information seeking prove to be distinctive then the findings can be developed in the Phase 3 study that aims to compare information-seeking expectation with account access expectation. Thus the preliminary phase tests whether a third comparative study is justified.

Phase 1 was a qualitative study that aimed to gather a range of expectations held by consumers when considering using a bank web site for information search. Phase 2 explores and develops the Phase 1 findings by examining the frequency and dimensionality of normative expectations. In addition Phase 2 investigates the influence of selected socio-demographic and behavioural variables including Internet experience and product knowledge. Specifically Phase 1 and Phase 2 address the following research questions:

- What are consumers' normative expectations of system attributes for information search?
- How do normative expectations for information search compare to extant research on account access?
- To what extent do normative expectations of bank web site attributes differ for information search and account access tasks?
- Are there differences in expectations according to socio-demographic, attitudinal and behavioural characteristics?

The chapter is divided into two sections. The first section details the data collection, analysis and findings of Phase 1. The second section reports on the data collection,

analysis and findings of Phase 2. The chapter concludes with a discussion of how the preliminary findings inform the Phase 3 enquiry.

Section I: Phase I Focus Groups

4.2 Section Introduction

Phase 1 aimed to generate insight into consumer online information search including: the influences on online behaviour, the advantages and disadvantages of the medium and the expectations held by consumers when considering using a bank web site for information search. This section details the data collection, the data preparation, the analysis process and findings for the Phase 1 Focus Groups.

4.3 Data Collection, Preparation and Analysis

Data was collected from a convenience sample of students. It was felt that students were a valid source of data since they form part of the 16-24 age group that are the largest group of Internet users in the UK. In addition, it has been noted that students are an attractive target market for banks and building societies partly due to their future earning potential and also their levels of debt (Lewis and Bingham 1991). A discussion of the procedures for data collection and analysis is contained in Chapter 3.

Participants were recruited through lecture announcements and by e-mail. Each participant was sent an e-mail outlining the topic as “online information seeking and financial services” and giving the time and place of the focus group. The topic was identified in advance since “if the participants in a focus group have spent some time thinking about the topic to be discussed... the conversation will be more informative and lively” (Zeller 1993:168).

It was originally proposed to hold three focus groups. Krueger (1993) notes that three groups are sufficient since little additional information is gathered after that point. However the recruitment process resulted in only two groups being conducted one group with 5 participants and another group with 6 participants. Krueger (1993: 78) states that 6-9 participants are the “ideal size of a focus group”. Other researchers have also experienced low response to enquiries that have financial services decision making as the research topic (i.e. Howcroft et al 2003).

The focus groups were held between 1pm and 2pm in a University seminar room in March 2001: Group A was held on 15th March and Group B on the 16th March. Lunch was provided in order to repay participants for attending. Upon arrival participants were offered tea or coffee and asked to take a seat. Before the discussion commenced participants were informed that their participation was voluntary and they could leave at any point, in addition ground-rules regarding procedural etiquette and confidentiality of the discussion were set.

An advantage of the location was that it would be familiar and easily accessible for participants (Krueger 1993). A disadvantage was that it would be associated with a teaching environment. This might enforce the hierarchy of the moderator and the participants might feel the need to “perform” which could result in subject bias (Robson 1993). In order to counter this bias changes to room layout were made to create a more informal atmosphere through the removal of desks and the rearranging of chairs to form a circle. Details of group composition are given in Tables 4.1 and 4.2.

Table 4.1 Composition of Group A

Code	Gender	Usage
L	Female	5-6 hours per week lots of reasons for personal and University Use
M	Male	8 hours mainly searches for news
Q	Male	8 hours per week mainly for news
S	Female	5 hours per week
T	Female	10 hours per week mostly for e-mail

Table 4.2 Composition of Group B

Code	Gender	Usage
A	Female	7 hours per week text messaging and essay research
C	Male	7 hours per week news, e-mail and academic purposes
D	Male	20 hours per week mainly work through course
K	Male	10 hours per week, online banker
N	Female	5 hours per week company research
U	Male	7 hours per week, online banker

There were gender imbalances in both groups, which can result in the discussion becoming limited to the dominant gender group (Krueger 1993). The moderation attempted to address this by encouraging responses from all participants and no differences in the extent of response were found when reviewing the data. When the groups convened it became apparent that there were pre-existing relationships amongst some of the participants. On one hand this enabled the formation of a relaxed atmosphere and resulted in productive discussion. However, within Group B individuals with pre-existing relationships became more dominant and digressed into a discussion of bank dissatisfaction. The moderator took remedial action by restating the original question and thus was able to refocus the discussion.

In accordance with the objectives of the research the discussion was designed to be exploratory. In general there was a tendency in both groups to shift from information seeking to other usage i.e. for online shopping. However this information helped to develop understanding of participant attitude and experience towards the medium in general. Overall, participant interaction was good and the research was productive in both groups.

Discussion in each group was guided by a topic guide (Appendix IV). A discussion of the compilation and testing of the topic guide is given in Section 3.10.1. To begin the focus group the group members were asked to introduce themselves and to describe how frequently they used the Internet. This approach is known as a “discussion-starter question” where “the central objective is to get each participant to give some meaningful response or opening statement” Morgan (1997:49). Thus this question was selected to be easy to respond to and was designed gain insight into the range of usage (Morgan 1997).

Discussion then moved onto online information search activity. Participants were asked to discuss the advantages and disadvantages of using the Internet as a source for information, this question was designed to gain insight into how participants felt about their online activity and its outcomes. After generating a range of opinion into the outcomes from using the Internet as an information search the discussion flowed naturally onto how specific web site attributes facilitated or impeded information search activity and the importance of these features to each individual.

The final stage of the discussion focused on financial services and the features of an excellent bank web site. Initially the focus of this section was on a positive outcome (i.e. an excellent experience) however participants often commented on how specific web site attributes contributed to the negative outcomes they had experienced. Thus the general discussion-starter question acted as funnel which determined a logical agenda of topics and encouraged discussion to build towards the specific area of interest (Morgan 1997).

Whilst topics for discussion were pre-planned moderation remained flexible and open to new avenues of enquiry that emerged, as is appropriate in exploratory studies (Frey and Fontana 1993). For example, respondents began to discuss the advantages and disadvantages of having an online bank account and the information needed if they were considering making this decision. This discussion theme was allowed to develop as it was felt that the insights generated were of interest to the research topic. In all the focus groups there was active debate and exchange of anecdotes amongst the participants indicating that a focus group format was an appropriate data collection instrument for this enquiry.

Three iterations of analysis were conducted in accordance with grounded theory guidelines (Strauss and Corbin 1998). The focus groups were transcribed and codes were assigned to the data using NUDIST*4 coding software. In the first stage of analysis open codes were assigned to the data as themes emerged through an initial interpretation of the data. This level of coding is descriptive (DeNardo and Levers 2003). In the second stage, axial codes were assigned to the open codes, this level of coding is analytical and explores relationships between the open codes and the data they represent. The final stage of coding was selective coding, where core codes were used to group the axial codes to higher level of abstraction and unity (Strauss and Corbin 1998). The coding categories are listed in Appendix V.

4.4 Findings

4.4.1 Patterns of Internet Use

Participants used the Internet for a wide range of tasks (Table 4.3). Given that the sample was composed of students the initial discussion focused on use of Internet sources for essay research. In addition group members commented on their use of the Internet as: a communication medium, a source of general information and a source of pre-purchase information. The Internet was also used to purchase goods, such as CDs and books and services such as entertainment and travel. In terms of online banking behaviour only two male participants (U and K) banked online.

Table 4.3 Range of Internet Use

Task	Illustrative Quote
Academic Work	<i>I've used it quite a lot for researching essays and following up information that has been hard in the lectures and something like that (K, Male)</i>
News	<i>I read the paper on it every morning, just the headlines appear, I've got a Yahoo account, they appear on my Yahoo account on the side, just the Scotsman headlines and the Reuters headlines and the comedy headlines as well (C, Male)</i>
E-mail/Text	<i>It's good to keep in contact with friends from home who are at other universities, it's very useful for that (S, Female)</i>
Price Comparison	<i>I was looking for a good deal on a used car for example and those kind of things it's just a very very good opportunity to use the Internet because you can beautifully compare prices across countries and get good comparisons.(K, Male)</i>
Locating Goods	<i>I am looking for a wee puppy, so I am just looking for it (T, Female)</i>
Purchasing goods or services	<i>I also use the Internet to book flights and stuff like that and check flights (A, Female) I have bought CD's and tickets for concerts and the train and coach. (S, Female)</i>
Job Hunting	<i>I am looking for jobs for when I graduate, and I was recently doing a search for that. (L, Female)</i>

Participants commented that free access through the University or a broadband connection influenced their usage. Those who had broadband or free access through their halls of residence described how they were constantly connected to the Internet and used several applications simultaneously:

“I actually have a 24-hour broadband connection at home and just sit there and have everything open, e-mail and SMS and chat rooms and what I’m actually researching and everything that’s going on between the different things” (D, Male)

“I leave the Internet connection on seeing that it’s free at the University anyway. I just leave it on all the time and I kind of I just read it like for fun for breaks in between work”. (C, Male)

“I haven’t got broadband up here it’s back home and I’m a lot more conscious about going on and trying to find specifically what I want.” (A, Female)

Research shows also that US students believe that a faster Internet connection would promote their Internet use but not access at home (Fusilier et al 2005). The researchers in this instance conclude that US students might value other activities more highly than spending time on the Internet. However the comments made in the focus groups offer an alternative explanation and give insight into the value that students place on the ability to do multiple activities online rather than the opportunity to do more offline.

In one focus group a participant also commented on how connectivity influenced his online banking behaviour:

“Personally I would like to bank by the Internet. I have tried one and because the [broadband] connection in the student halls is not there it has been delayed. I won’t like to do it at the University I would like to do it at home.”(M, Male)

The researcher was unable to locate any studies into online banking that examined influence of a broadband connection on adoption intentions. However several studies find that slow download negatively influences adoption (Liao and Cheung 2002, Sarel and Marmostein 2003, Shih and Fang 2006). In addition various banking studies into web site quality also identify that speed (Siu et al 2004) and efficiency (Joseph et al 1999, Siu and Mou 2002, Sohail and Shaikh 2008) are dimensions of web site quality and satisfaction. Thus access to broadband might be an influence on online banking adoption and of interest to explore in subsequent research.

4.4.2 Positive Internet Search Experience

In both the focus groups the Internet was valued as a low cost and fast source of information:

“It’s cheap and fast” (S, Female)

Participants described how they used the Internet for mainly pre-purchase information search. In particular participants valued the ability to work independently of retail outlets:

“It is at your fingertips you don’t have to get out of your seat, you don’t have to get up. If you are looking for information on holidays you don’t have to get up and go to a shop or go to somebody or ask someone.”(L, Female)

One of the characteristics of the Internet is the lack of contact with sales staff whilst searching for information (Bauer et al 2002). In the context of online shopping previous studies have also shown that the absence of face to face interaction is perceived as a benefit by some consumers (Maher et al 1997, Wolfinbarger and Gilly 2001).

One participant described how she used the Internet to check prices before visiting a retailer. This participant used the Internet to reduce risk and uncertainty before engaging in shopping activities so that she did not get “ripped off”:

“I just want to make sure that I know how much they really cost and whatever I am looking for so when I go to the shop and talk about it I am not getting ripped off.” (T, Female)

This combination of online search and offline purchase is classified as “hybrid” shopping (Frag et al 2007). For example, Ward and Morganosky (2000) have examined this pattern of online information search and offline purchase in a data set of 4,266 online consumers. They found that gathering information online increased the likelihood of purchase and they suggest that these consumers are more price-sensitive and will be seeking the best terms possible. Frag et al (2007) cite the results of a survey undertaken by the Boston Consulting Group (2001) that finds that most European Internet users (88%) browse the Internet for product information and

that, of these, 75% purchase the product offline. However overall research into patterns of online search and online or offline purchase remains sparse (Bhatnagar and Ghose 2004, Van Dijk 2007, Farag et al 2007). Thus there are indications that information search and online transaction have distinct characteristics that attract consumers with different needs. This finding provides support for conducting a comparative study across two task scenarios in Phase 3 of the research.

4.4.3 Negative Internet Search Experience

Participants commented in depth on the negative outcomes that they had encountered when searching for information online. There was a considerable range of points and level of detail in this discussion. This sub-section reports on respondent concerns about the quality and quantity of online content, the impact of web site advertising and the supply of personal details.

4.4.3.1 Quality and Quantity of Online Content

When assessing the quality of online information participants complained that “anyone” could post content and thus the accuracy of the information could not be relied upon:

“I think a problem with the Internet is that because anyone can make a web site page, you don’t know how accurate the information is. (A, Female)

“There are extremes of information either it is extremely cutting edge and up to date or outdated and they are just putting it on there to fill up space or to give background information” (L, Female)

Raman (1997), in a qualitative study, also found that many consumers do not visit web sites because of a belief that the information would be biased. Interestingly participants in the US study distrusted web site content because it had been provided by marketers and commented that it would be like reading a commercial. Hence Raman (1997) draws connections between these findings and research that indicates that consumers also had low perceptions of the informational content of TV advertising (i.e. Haller 1974, Mittal 1994). Thus subsequent research may find that

consumers have low predictive expectations for the information content of a bank web site.

Participants highlighted that price information was particularly misleading. Several participants outlined how they experienced variation between the prices found online and those in offline outlets:

“Descriptions on the Internet sites very rarely match the actual products perhaps in the colouring, the price, even the prices sometimes are different from the shops” (L, Female)

“The Trainline.com is supposed to be used to buy train tickets and it’s just the hardest thing ever to actually find supposedly the cheapest tickets. The thing is that if you just phoned and called them you can always get cheaper tickets.” (A, Female)

One participant commented that the additional charges located in the small print increased the overall cost when the headline price posted on a web site was attractive. In this instance she felt that her time had been wasted and that using a shop would have been more efficient:

“I was looking for a TV and it says all the nice things in big flash letters so it catches your eyes and all the details of the extra charges I have to pay they are all in tiny little letters so you can hardly see it. So I have to check it and find that I could end up paying about £30 more than I actually expected. I think there is too much of advertising effect and not giving me the information. I felt that after a couple of hours of research I was just wasting my time. Maybe I would be better to go to the shop and just get it done.” (T, Female)

In addition to criticising the quality of information this participant also experienced problems with the quantity of information online. She complained about “information overload” (Blair and Maron 1985) and felt that often there was simply too much content to process. Thus the volume of information was considered to reduce the temporal efficiency of the medium:

“It’s quite difficult to find what you want even when you go to the right web site there is so much information that you need to look at them one by one and it is so difficult. It takes a long time and you need to find what you want. It’s actually not that easy.” (T, Female)

Chen et al (1996: 88) note that Internet search has grown progressively more difficult as the volume of online information, and the ease by which it can be accessed, has increased. They argue that this has resulted in “an extensive information space accessed through hypertext-like browsing [that] can .potentially confuse and disorientate the user.. and can cause the user to spend a great deal of time while learning nothing”. Foss (1989) terms this problem of trying to convert information into understanding “the art museum phenomenon”, where one can spend a whole day looking at paintings but losing the ability to recall any one in detail. Rowley (2000) cautions that marketers need to be “wary” of creating information overload and ensure that consumers are given sufficient information to make a purchase but not so much that any subsequent evaluation becomes onerous. Focus group participants clearly identified that the quantity of online information had introduced complexity and additional time requirements into what was expected to be a quick and easy task.

This discussion lead to comments that the Internet was not an ideal information medium for accessing detailed information. It was felt that looking at a screen caused eyestrain, that reading from a screen was slower and less enjoyable and that there was a lack of time to reflect on information:

“People still want to have things in their hands physically rather than everything being on a screen because it’s just tiring I mean as soon as they invent a screen that is as good as a page to read and doesn’t tire your eyes I’m perfectly fine with that.” (K, Male)

“It is more relaxing almost to sit in front of the TV with your newspaper here or whatever as opposed to having to go to the computers which are on screen.” (A, Female)

“Apparently you do actually read something like 20% slower off screen.” (D, Male).

“When you are looking at it longer your eyes seem tired and you just cannot be bothered. If it is in a newspaper you put it away and probably go back to it, but with the Internet you need to restart and research again to find what you want and look at it again.” (Q, Male)

Small font sizes affect the readability of information content. For example, several studies that show that an optimum font size should be 12-point (Tullis et al 1995, Bernard et al 2001, Chisnell et al 2004). However Becker (2004) found in an

analysis of 125 web sites found that only 20% used a 12-point or larger font size and that links in peripheral areas of the page (such as “help”, “privacy policy” and “contact us”) were displayed using 10-point or smaller font sizes. Thus poor web page design can reduce the effectiveness of the Internet as an information source for detailed information.

Whilst focus group participants valued the Internet as being fast, cheap and free of temporal and geographical constraints they had low expectations of the degree of ease by which they would be able to access information of any quality. It will be of interest to explore in the later stages of this research expectations of bank web site information being able to increase understanding.

Focus group participants commented on a preference for other sources of information. This finding is particularly interesting when considering research by Ratchford et al (2001) into pre-purchase information search amongst 3,000 new car buyers in the US. They found that use of the Internet was associated significantly with increased use of print sources (books, brochures and newspapers) that provided information on functional attributes. They suggest that Internet users attach more importance to a car’s functional attributes and argue that over time the Internet will be a substitute for these alternative sources of information.

However the focus group findings give insight into the use of multiple sources of information. The comments of the participants indicate that it is the limitations of the Internet as an information source that is prompting individuals to supplement it with other sources of information. Thus in order to meet demands for alternative sources of information that are easier to read an important attribute of a web site may be expected to offer the facility to download or order additional information in a printed format.

Participants in Focus Group A noted that getting the maximum benefit from online information depended on an individual’s skill at simplifying the search task and filtering information. This skill was developed through experience of the medium:

“You need to refine your search if you are going to find something specific or know the web page that you are going for. Some of the

search engines are quite difficult to use as well. If you are trying to refine your search then you have to go to an advanced search and they are really difficult. There are lots of problems because they are quite hard to use.”(L, Female)

“As you get to search the Internet you get to know which ones will search for the right sort of things that you are looking for.” (S, Female)

There have been several studies that have examined how different levels of Internet experience influence user perceptions (i.e. Gefen et al 2003, Venkatesh et al 2003, Bhattacharjee and Premkumar 2004). For example, Castaneda et al (2007) use a sample of 2,813 international Internet users to examine how prior Internet experience influences the intention to revisit a health information web site. They use TAM to identify that “perceived ease of use “ is more important amongst less experienced users whilst “perceived usefulness” is a more important factor in determining a repeat visit amongst more experienced users.

In terms of the influence of experience on online behaviour, Holscher and Strube (2000) explore the impact of domain specific knowledge and web expertise on information search. They conducted an experimental study with 24 Internet users (both novice and expert) who undertook an information search task. In this study experts were defined as Internet professionals who had at least 3 years of intensive experience and who used the Internet daily and novices were undergraduate students.

Findings show that participants who have both types of expertise are the most successful in their search behaviour in terms of reducing the number of sources examined and increasing the time spent with each document. In particular, experts are better able to enter the appropriate search terms within a search engine and structure their search enquiry to avoid spurious results. In contrast “novices..were ignorant about a number of core problems of web searching e.g., the limited scope of individual search engines and of the necessity to state a search query at an adequate level of specificity.” (p 345). This suggests that those who have used the Internet for the greatest amount of time or with the greatest frequency may have different expectations from novice users. It can be suggested that those who have extensive

Internet experience would have higher expectations of the presence of tools and techniques that result in an effective and efficient search outcome.

4.4.3.2 Web Site Advertising

Discussion on the topic of online advertising proceeded with participants recalling and sharing their negative experiences. The practice of using “pop-up” advertising was found particularly annoying by one participant. Pop-up adverts are also known as interstitials. This refers to when a web page is displayed before the expected content page (Comley 2000).

“When you click on a web site it will come up with one pop up screen and another one, and another one, and you are constantly clicking, “No go away” and it will keep popping up anytime you click within that site.” (S, Female)

There was a lengthy exchange in Focus Group B on the outcomes of clicking on a web site advertisement. Participants commented on how links might be disguised as genuine information but upon clicking on this link users are taken to an advertising page that “traps” the user through breaking the return link. Links that divert to an unproductive information source and prevent a return to the previous web site reduce the speed at which an information-seeking task can be completed and thus introduce temporal risk. This extract of the interchange between the group members indicates the extent of the negative emotions and responses to this advertising practice:

A (Female): “Because you sort of just notice it like flashing and you’re like, “Alright, great”. And the worst thing is if you do just to find out what it’s about sometimes they break the link so you can’t actually go back to the page you were on before.”

C (Male): “I got caught by one today it was so stupid.”

A (Female): “It just annoys you. We have learnt to ignore it haven’t we really?”

K (Male): “Yeah, um cause I mean if you are looking for something people now are educated enough to use a search engine and search for what they actually want to find rather than being than offered all kinds of stupid things.”

In this exchange one participant talks of being “caught out” whilst another identifies that those users with experience and skill will be able to ignore these features or use a search engine to avoid being exposed to “stupid things”. These comments are consistent with the discussion in Focus Group A where skill and experience were also identified as resulting in effective search.

Commercial surveys indicate that the effectiveness of banner advertising is declining and thus Internet users are learning to ignore them. For example, in 2004 the clickthrough rates for banner ads were 0.30% whilst in 2007 they are reported as 0.18% (Adtech 2007). Dreze and Hussherr (2003) examine the effectiveness of banner ads in an experimental study with 49 French consumers. They find that users avoid looking at banner ads and also are able to recognise an ad without having to look at it directly. However they did not find any support for the proposition that the more Internet experience a subject had the less time they spent looking at a banner ad. Thus whilst it can be argued that attitudes towards online advertising links might vary according to an individual’s experience and skill at using the Internet there is limited evidence to support this proposition. The influence of experience and skill upon expectations of online features such as moving or flashy graphics will be of interest to explore in the subsequent research.

Overall participants had a poor view of online advertising and one participant compared online advertising unfavourably to television advertising:

“It’s not quality advertising it’s really trashy stuff. At least television advertising is quite funny. Sometimes you watch it and you’re interested even if you are not interested in the product but Internet advertising just seems to be awful.” (C, Male)

“On the Internet all the time, basically consuming all the time, being offered things all the time and I think that a real problem with the Internet now is that a lot of companies do things that are technically possible but not actually useful to people.” (K, Male)

However not all participants held such strong views against online advertising. Image intensive web site design was considered by one user as the “cost” of free online content he added that, in his opinion, as long as these features were entertaining, they were useful:

“If you want to keep the content free you have this. It is through this advertising that they get the funds. I think as long as they are entertaining, some of them are useful.” (M, Male)

Research shows that whilst banner advertisements are in decline there is evidence that video ads are effective in encouraging consumers to click in response. For example Doubleclick (2008) report that the response rate for an in-page video is 0.12% and that users spend an average of 11 seconds interacting with rich media. In addition 61% of users say that they may notice an ad and then visit the advertised site later and 67% say that they sometimes visit a physical store after viewing an ad (Doubleclick 2006). Thus there is evidence that the presence of interactive web site content is of value to certain Internet users and it will be of interest to see how expectations vary in the subsequent research.

4.4.3.3. Supply of Personal Details

Participants commented on their dislike of having to register to access information. There was reluctance to supply personal information in order to proceed to use a web site for information search. This was felt to be “an invasion of privacy”:

“On a lot of pages they want personal information before you can go any further. So you start on the home page and then you find a couple of pages where you find something really interesting you want to have a look at but you have to put in all this information: your name and address your phone number. Just different details like that before you can get anywhere and email address. And it’s telling you that unless you give that you cannot get into the Internet. And that’s quite annoying that’s quite obtrusive.” (L, Female)

Some participants questioned why personal details were gathered and were told by others that this was the “cost” of free online information since personal details were commercially valuable:

“Sure it’s free to search for information but they want something in return even if you are not going to actually purchase something they have got your personal information.” (L, Female)

One participant commented on the lack of a widely-recognised standard or guarantee of privacy:

“They say they are safe sites then you still get the feeling that their information is still being passed on so I mean there is really a lack of some sort of standard that you can really rely on.” (K, Male)

Several participants revealed their coping strategies for avoiding “junk” e-mail.

Some participants deleted mail:

“I just tend to delete them sometimes if I don’t recognise who’s emailed I just delete it there’s no, you know, because at the end of the day if it’s one of your friends and it’s really important and you haven’t got back they will phone you.” (A, Female)

Other participants operated multiple e-mail accounts that then became the destination for any unsolicited communication:

D (Male): “The thing to do there is to have multiple e-mail addresses. I have another one that I never even look at it. There must be about 2000 different mails in it now but it’s a Hotmail account and anytime I have to subscribe to a journal or anything like that I just stick in the Hotmail address. I never look at it so any junk gets thrown into this chasm and never seen again.”

C (Male): “I like to have three accounts because it takes longer to check them before you actually start working on any essays.” (Laughter)

Whilst this strategy was used by several focus group members one participant reacted against this strategy as being “too stressful”:

“I mean it’s obviously stressful to have I don’t know how many e-mail accounts just to filter out the information you don’t want to get and it really it should not be like that it’s just too stressful and not productive either.” (K, Male)

Thus whilst some group members were prepared to manage direct mail in creative ways other participants viewed the requirement to supply personal details as a real risk to their privacy.

There was particular sensitivity to financial institutions requesting personal information and there was unease that the supply of personal details might result in direct mail:

“When it’s actually targeted towards you then I think there are big issues of morality, invasion of privacy. I don’t like it all, I don’t like people knowing exactly what I am doing. I feel quite paranoid that if I go into a company’s web site like Morgan Stanley or something like that I will actually receive an e-mail from them. That is a targeted e-mail saying, “We see you are interested in this. Do you know that we also do this?” and I think, “No this is not good!” (D, Male)

There is evidence that a request for personal details from consumers using a bank web site for information search activity would not be viewed favourably and would be a barrier to use. Although the capture and utilisation of online information offers the opportunity to facilitate relationship marketing (i.e. Alba et al 1997), it appears that customer relationship barriers are being erected.

Research has shown that loss of privacy is an ongoing concern amongst Internet users. For example, in an early study, Korgoankar and Wolin (1999) found that non-transactional privacy concerns (e.g., detesting junk email or concern about personal information) were significantly and negatively associated with overall web use amongst a sample of 401 US Internet users. Hoffman et al (1999) in a survey of 14,014 US Internet users, find that 95% of respondent declined to supply personal details to web sites at some point. They also find that of those who have supplied information 40% admit to having supplied inaccurate or fabricated details. Concern about the use of personal information by marketers has also been cited as a barrier to consumers providing demographic data online in other studies (Wang et al. 1998, Lohse et al 2000).

In a later study, Brown and Muchira (2004), using a survey of 186 Australian students, examined reactions to both unauthorised contact by a company and the unauthorised sharing of details with a third party. They find that high levels of concern over being contacted by companies without prior consent were negatively associated with online purchase intention. Hoffman et al (1999) find that 69% of those who declined to supply details did so because there was no guarantee on the web site of how the information was going to be used in future. Thus Brown and Muchira (2004: 63) argue that when a company sends an unsolicited e-mail to consumers “they may risk destroying the relationship or the potential for creating one”.

The lack of a guarantee of how information could be used in future was a concern of one focus group participant. Ovans (1999) cites evidence that blatant personalisation of the computer response makes customers less likely to make purchases because the customer can see that changes are made based on information that was not directly volunteered by them. However Brown et al (2004) find that unauthorised sharing of data does not have an impact on individual purchase behaviour. The authors argue that one explanation for this finding might be the age of the participants in their study and another factor might be that consumers are becoming used to receiving direct mail both on and offline. Hence the trading of consumer details may now be an accepted fact of business as evidenced by the comments by the focus group participant that the capture of personal information is the “cost” of free information.

Focus group findings support assertions that the Internet is valued as a “free” source of information that locates information conveniently at one point of contact and reduces search costs (Evans and Wurster 1997, Van Raaij 1998). This study has also identified that using the Internet apparently adds a cost to information search namely the “invasion of privacy”. Hagel and Rayport (1997: 54) predict a privacy backlash among consumers but they accredit this not to a “desire to keep information about themselves confidential” but to “a pragmatic assessment” of the returns that are being offered in exchange for that information. In the focus group discussion it was clear that participants had assessed the exchange that was taking place and some participants appreciated that online information was being provided at no charge in exchange for personal details. However others felt that they had a right to privacy and that in order to exercise this right were prepared to supply “false” address details to subvert marketing communications.

Whilst studies into online banking have focused on the security features that prevent unauthorised access to an individual’s account there has been limited research into consumer expectations of how a bank should use their personal details to contact them. Thus this area will be explored in greater detail in subsequent phases of the research.

4.4.4. Features of an Excellent Bank Web Site

After discussing negative information search experiences the discussion moved on to exploring the features that a bank might include on its web site to make it an excellent information source. This was a wide-ranging and very productive discussion. Discussion topics included: desired information content, specific tools to facilitate navigation, the use of graphics, expectations of offline support and presence and concerns over security. The following sub-sections summarise the insights gained from the analysis.

4.4.4.1 Information Content

When asked to discuss the information that they might seek on a bank web site, participants initially described the information that they would need before opening a current account. Thus information search was considered as a pre-purchase activity and requirements for information on overdraft charges, foreign exchange arrangements, interest rates, branch numbers and branch location were considered:

“As a student I would look for things like overdraft facilities, switch card, cheque, the number of branches around Edinburgh. And charges as well, how much money you are charged for going a penny over or the overdraft or something like that or how interest charges accrue for the overdraft. “(L, Female)

Devlin and Gerrard (2004: 25) in a UK study into choice criteria in retail banking find that “economic factors such as interest rates paid and fees, have become of significantly greater importance in prompting choice”. However Devlin and Yeung (2003) in a survey of 3804 financial services consumers did not find pricing and interest rates to be significant determinants for a propensity to use online banking. Thus it will be of interest in the subsequent research to learn of the expectations for price information to be present on a bank web site.

One participant wished to know not only the level of bank charges but also the procedures by which they would be applied and also the processes for contacting the bank to query the charges and how to complain:

“I would want to know exactly what charges are for when, when they apply when they don’t apply. I would want to know when to complain or how to ask questions to a bank.” (Q, Male)

Participants in Focus Group B agreed that printed and onscreen information sources should be combined and that a bank web site should have the facility to download or request a brochure:

K (Male): “It is important to be able to get printed information because sometimes people get onto web sites and are not quite sure what they want to do. You should actually have the opportunity of ordering or downloading a prospectus or brochure”

A (Female): “Yeah I think it’s going back to the same thing where he was saying you need loads of information. You know we said that we can’t actually read that much information on screen so you should be able to send off or download a free information pack.”

These comments are consistent with the earlier discussion that information overload created problems for participants when searching for information. Thus participants expected that the facility to download or order brochures should be present on a bank web site if they were searching for information.

Several participants wanted and valued the facility to compare fees and charges between competing banks:

“You couldn’t sit down in the Bank and let them tell you what the other banks offer but you can go online and check out their interest rates, their lending and all that.” (C, Male)

“You can sit down with all the different banks different options and you could actually compare them all or you could actually do it online and have a look so it compares it all for them. Like Virgin bank they actually go away and find the best deal and then come back and show you it.” (L, Female)

“I think it would be useful if they have other savings accounts and the interest rates. If they could list their interest rates and their competitors’ interest rates and like to show their customers that this account is giving the better results.” (Q, Male)

In Focus Group A one participant valued the Internet as a source of objective information and felt that seeking information from a branch would result in pressure

to make a decision whilst Internet search would enable her to take the time to come to a reasoned decision:

“I think you can get more objective information on the Internet than from the branch where they are going to try to persuade you as much as they can to go for them. When you are on the Internet you have the time to compare and look.” (S, Female)

Thus there is evidence that participants expect that a bank web site should provide a comparison of their interest rates with those of competitors in order to provide an excellent service.

These findings are consistent with research that examines consumer responses to online tools that facilitate price comparison. For example Haubl and Trifts (2000) conducted an experimental study amongst 249 undergraduates on the influence of online decision making tools upon decision making outcomes. They examined how the use of two decision making tools (a recommendation agent and a comparison matrix) influenced the extent of information search (amount of search for information, consideration set) and decision quality (confidence in the decision taken). They found that both decision making tools resulted in better decisions being taken and participant product knowledge or interest did not moderate the results.

In addition, there is evidence that the provision of competitor prices on a web site enhances perceptions of organisational trustworthiness under certain conditions. Trifts and Haubl (2003) conducted an experimental study with 121 US students to examine reactions to access to competitor price information in the context of book purchase. They find that when the retailer had a moderate market position, which they identify is “one that offers the lowest available price in connection with some, but not all of the products”, then there is a substantial increase in perceptions of that retailer’s trustworthiness but not when that retailer was either the most expensive or the cheapest in the market.

However some customers questioned if any price comparison information provided on a bank’s web site would be accurate:

“I mean their comparison must be for the things that makes them seem competitive and others not good. I am not so trusting” (M, Male)

Devlin et al (2008) note that has been limited research into the effect of price believability in the context of services. In an experimental study amongst 525 UK consumers they found that product context had a significant impact on the believability of a sales offer and argue for a relationship between this finding and the characteristics of services (i.e. intangibility and risk). Participants in the focus groups also commented earlier on the misleading pricing of both products and travel services when searching for information on the Internet. Hence as outlined in the earlier review of the literature there are arguments that the Internet has increased the intangibility of product purchase, in this instance this increased intangibility could underpin overall scepticism towards online prices.

In order to improve the credibility of information offered online there was consensus within Focus Group A that a link to independent consumer-orientated web sites would be a good feature for a bank web site to have:

S (Female): “It would be good if there were links to neutral organisations, like if I was going to open a student account links to Student Pages or any number of students papers so that I could get the facts from other people.”

M (Male): “Yeah access to customer research.”

L (Female): “Yeah reports by The Mail and also the financial pages where they compare different account and current accounts.”

Barnatt (1998) identifies that links create a “value added network” and are a desirable web site feature. Thus whilst participants felt that a bank web site should have information on its own and competitors rates they also indicated that a bank web site should have links to other organisations in order to increase the credibility of the information that it provided. These views are in contrast with those stated in the previous discussion where participants spoke about their dislike of advertising links and pop-ups. Thus it seems that for certain organisations and in particular contexts these web site features are desirable and not others and hence it will be of

interest to examine the extent to which links to other organisations are valued in the contexts of information search and account access.

The discussion then moved onto the information that participants would like to see from their own bank if they were considering switching to Internet banking. There was considerable debate in both groups about how an Internet account would operate. In particular the process of paying money in and transferring money between accounts were discussed at length:

K (Male): "I've also seen this Egg thing but how do you actually pay money, pay in money to your account?"

C (Male): "How do you pay money in?"

K (Male): "Yeah"

C (Male): "Um well you can get your wages paid directly into it."

A (Female): "Because like they haven't got any high street branches."

D (Male): "Do you have to send it in the post or something?"

Thus whilst participants did not explicitly state that they would expect to find information on online banking they clearly indicated that such information would be useful to them. This finding is consistent with qualitative research conducted amongst US consumers by Sarel and Marmostein (2003). They find that non-users "believed that most transactions require a visit to the branch or to an ATM machine" and that there was a "lack of detailed understanding" of the technicalities of transacting (p 115).

Several participants who had considered online banking commented on their frustration at the limitations of bank web sites. The fact that loan and credit transactions cannot be completed online, because of credit checks and references, "cancels out the whole thing of Internet banking":

"Basically they are offering you all these services online and you need a reference or a credit check that is always done by paper which then just cancels out the whole thing of Internet banking. They will send you a confirmation by letter rather than by e-mail and then will

ask you to go to your bank to show them stuff to prove that's who you are." (L, Female)

There is evidence that consumers view that opening an account is an extrinsic task, that is when the web site is an interface "to another system that is handling the primary purchase activities involved"(Gefen and Straub 2000:3). One participant contrasted the provision of online information with transacting and argued that any confirmation of a transaction needed an offline component:

"No matter how technically good it gets at informing the consumer it just doesn't work because of this final little human bit that you need to confirm what you are actually doing" (K, Male)

This has implications for web site design since Gefen and Straub (2000) found that "perceived ease of use" and its influence on the adoption of a web site were low when the task under consideration was extrinsic to the web site. It will be of interest to see in subsequent research whether consumers expect information search to be an intrinsic task, that is when "the IT itself is an integrated application using both an intelligent interface and database to provide the actual service" (Gefen and Straub 2000:3). If this is proved correct then there will be expectations that a bank web site should provide sufficient information for a consumer to make a decision without having to visit a bank branch.

4.4.4.2 Navigation

The need for ease of navigation and efficiency in search activity lead to expectations that an excellent bank web site should have a search engine, a site map and a menu that enabled the web site visitor to easily access the information that they required:

"On the bank web site you want to see accounts, credit services mortgages, click on mortgages. Maybe a nice little table, listing three different types of mortgages the pro's and con's of each if you want more information you go in there." (D, Male)

"I think a site map actually would be a good thing, since sometimes you are not quite sure what you are looking for." (A, Female)

"A good search engine on their site so it did not just throw up any pages that mentioned the word like other search engines." (S, Female)

It was stressed that a site map would help if the information seeker did not have sufficient product knowledge or skill to operate the search engine. Thus participants expected that a search engine and a site map should be present on a bank web site. In the earlier discussion of problems of information volume participants noted that as they gained in Internet experience they could utilise web site tools to make their search more efficient and effective and thus reduce temporal risk. In terms of online banking, using a survey of 300 UK consumers, McKechnie et al (2006) found that prior experience of the Internet and product category involvement are positively related to “perceived ease of use” of a financial services web site. Thus it is of interest to explore further the extent to which the expectations of navigational aids vary according to experience of the Internet and the level of financial services knowledge.

4.4.4.3 Graphics

Consistent with the negative attitude towards web site advertising, there was criticism of the use of the Internet for image building by the banks:

“These companies use Internet web sites to give themselves a friendly image to users. They would be more successful if they offered good quality at a cheaper price and stopped trying to entertain people”. (N, Female)

There were strong feelings that banks were being influenced by the fact something was technically possible to do online rather than considering whether consumers actually wanted this feature:

“I think it is going too fast in that they are forgetting the fundamentals. The banks are jumping on the Internet band wagon but they have not actually given us what we wanted so they can’t move forward and improve and make money until they give us what we want now rather than later. I think it is going to go forward but the banks need to consider what consumers want not what they are able to put out on the Internet.” (L, Female)

In particular it was felt that the use of images and colours on a bank web site slowed down connectivity, did not add any value, created a negative impression and reduced

the efficiency of the process. The effectiveness of banner ads has been questioned by Yang (1997) for these reasons.

“Egg has a nice layout but for my tastes personally there are too many colours it is too flashy.” (D, Male).

“Speed of use as well, less flash loads of sites have loads of flash on them and they just take ages to download and look at it.” (C, Male)

Participants particularly disliked pop-up windows and “flashy” graphics and felt that these online devices were inappropriate for a financial services institution to use:

“I think that at the end of the day you have got realise that you’re a professional bank and you just you know there can’t be too much flashing or it just gets a bit trashy.” (A, Female)

“I mean in my opinion it shouldn’t be that image.” (K, Male)

Thus there was a general feeling that the use of graphics and pop-up windows should not be a present on a bank web site.

Several researchers identify visual appeal in the form of moving images and attractive graphics as a dimension of web site quality (Liu and Arnett 2000, Barnes and Vidgen 2002, Loiacono et al 2002). For example Yoo and Donthu (2001) in a survey of 69 marketing students identify that an aesthetic design includes site creativity with multimedia and colour graphics. Wolfinbarger and Gilly (2003) note that many research projects have examined a wide range of web sites including news and entertainment sites and argue that the findings are relevant to experiential and not goal-directed online behaviour.

Wolfinbarger and Gilly (2003) through a series of focus groups identify that web site design quality is perceived by online shoppers as: navigation, in-depth information provision, speed and ease of transaction completion, product selection, level of personalisation and efficiency rather than moving graphics. They provide further support for these findings using an online survey of 1,013 consumers of products. They find that web site design measured in this way is the most important influence on perceptions of quality.

In the context of online banking, there is mixed evidence of the extent to which consumers expect a bank web site to be visually attractive. For example, Kim (2005) finds that site design (use of colour, layout, consistency and menu ease of use) are positively related to web site satisfaction. However in a survey of 175 US bank customers Joseph and Stone (2003) found that visual appearance was the lowest ranked of seven web site quality dimensions.

In contrast, there is evidence that those design features that support goal-directed behaviours are more closely associated with web site design quality. For example Jayawardhena (2004: 201) identifies that the maintenance of a web interface that “enhances the overall browsing experience of consumers” is one dimension of online banking service quality. The factor loading for the items grouped within this dimension are: ease of navigation (.66), regular information updates (.64), the incorporation of colour (.59) and interactive features (.55). Thus it can be seen that the more utilitarian features are correlated more closely with this construct. As previously noted in the literature review few studies make a comparison across task scenarios, thus it will be of interest to explore this further in Phases 2 and 3 of the research.

4.4.4.4 Offline Presence

Several individuals outlined their preference for dealing with a member of bank staff rather than using a self-service option to conduct their banking transactions. For these individuals, telephone banking was preferred to online banking because “you actually speak to a human”. One participant could see no advantage to banking online:

“I think telephone banking is better than Internet banking although it takes a little bit longer. You actually speak to a human and they can give you everything like your balance and you can pay your bills. You can just do whatever you do with Internet banking.” (T, Female)

Other customers wanted a “bricks and mortar” branch network as “back up” for their online banking activity:

“If I am in a panic over something that is going on in my account then I want to be able to rush into a solid building and see people there and say, “I want you to sort it out now”. You obviously need some sort of back up at the local branch if something goes wrong.” (L, Female)

“It is still very important to have the opportunity to get in touch with humans if you want” (K, Male)

Some participants wanted to have the opportunity for online access in a branch environment:

“It would be good if the branch had a computer monitor set up where you could just do what you wanted to do there and then in the branch. If you just want to ask a query or find out something really simple so you could bypass the queues and still at the same time still have the knowledge that you could go ask them if you wanted.” (L, Female)

Advantages to having an in-branch terminal was being able to by-pass queues and thus save time whilst having reducing any risk of any negative outcome through face-to-face interaction in the event of a problem. Several online banking researchers using the DoI perspective identify that consumers expect that terminals should be present in branches to facilitate trial (Sathye 1999, Black et al 2001). Durkin et al (2003) in a survey of 2, 319 UK bank customers finds that individuals who place more value on face-to-face contact and are more satisfied with the availability of branch staff are more motivated to adopt remote banking. The researchers had earlier hypothesised that satisfaction with an offline service would be an inhibiting rather than a motivating influence.

The findings of these focus groups indicate that young consumers place value on having bank staff present for reassurance particularly when conducting an online transaction. This finding is consistent with a second survey by Durkin (2007) amongst 480 UK consumers. In this study he finds that for simple products consumers desired reassurance from branch staff about the safety and security of online transactions before trial. Thus there is an expectation amongst bank customers that an excellent bank web site should be available via terminals in branches to help when transacting.

In both focus groups the need for staff-customer interaction at various transaction stages was identified. One participant emphasised that he valued the pre-purchase advice that branch staff could offer when he was making a decision to purchase a financial service:

“If I wanted to open an account I would actually want to go into the bank to talk to someone. I want to make sure that this is the best option for me. They will know if it’s best.” (M, Male)

In terms of post-purchase communication another participant commented that online banking was not as responsive to enquiry compared to alternative channels:

“I guess with the telephone banking is that they are customer services. Whereas on the Internet you feel that there is no human behind that web site at all. However many emails you send them they don’t actually want to respond to you. But with the local branch or on the telephone at least you have someone to talk to.” (S, Female)

Other individuals felt comfortable using e-mail but required a personalised response from a “nice little person” the “next day”:

“I would want to ask question and have a little page where you can give the details of your e-mail address and ask a nice long-winded question and have some nice little person answer it the next day and e-mail you back with your answer.” (L, Female)

“There is not a way to communicate with personnel, to have a personalised question that comes up on your Internet site on the next day.” (Q, Male)

It is of interest to compare these comments to those made in Section 4.4.2 where participants stated that an advantage of the Internet as an information source is its ability to remove the need for face-to-face interaction with sales staff. Thus it appears that the extent to which consumers place value this Internet characteristic when information seeking appears to vary according to the specific service or good being offered. In the context of this research the value placed on remote and face to face interaction with staff through e-mail might be due to age, gender or alternatively the level of product knowledge held by the participants and these influences will be explored in the subsequent research.

Some respondents wanted to have access to a frequently asked questions page to enable them to gain answers to a query:

“Like a frequently asked questions page but one that can be updated like a message board so you could post your question and then maybe wait for an answer or feedback. Or the complaints procedure (laughter)”(S, Female)

One participant noted that, where product knowledge was low, access to a frequently asked questions page would decrease the time spent making enquiries. This attribute would also help the novice customer to understand the areas of importance:

“It would be a good way to get initial information if you filled in all the forms online and read all the stuff online before you went down to see them. Then surely that’s saved them time, because I bet they do get asked those frequently asked questions all the time so if you have read them and know the answer then it’s probably more useful.” (C, Male).

“You know you can learn something about it so you can feel more confident when you actually deal with the bank. You can sit there talking and you will basically know what you are talking about. I want to know the basic background information and know how it works and then it will be quite good to talk to somebody.” (T, Female)

This supports observations that certain customers, particularly those who consider themselves to have low levels of financial knowledge, view the impersonality of the Internet as an advantage since it will not expose their lack of financial sophistication, (Jenkins 2000). The sensitivity that some individuals feel about revealing a lack of knowledge about financial products was revealed within Focus Group B. One member of the group made fun of another participant’s lack of financial knowledge and sophistication:

A (Female): Your parents open a bank account for you when you’re young and you just tend to keep it. I’ve still got my

C (Male): Secret squirrel saver!

A(Female): (laughs) yeah I still have got it, when I came to England my parents opened a bank account for me and I’ve still got it. I am just going to stay with Midland just because they’re quite nice. They’ve extended my overdraft time and time again and I don’t know what APR means or anything like that.

C (Male): And we're business students? (laughter)

A (Female): No I do know what all this stuff means. When I chose Midlands for my student account it was because it had the best overdraft that I could find and they had a 4-year rail card and that was about it actually.

In this exchange A defended her decision not to change accounts by saying, "I don't know what APR means or anything like that" and C commented sarcastically "and we're all business students". A then felt the need to defend herself by claiming that she did have financial services knowledge. Thus this exchange shows the degree of embarrassment that some individuals may experience over their lack of financial services expertise.

Participants in both focus groups contrasted their lack of knowledge of processes with the expertise of bank staff and commented on their fear of making a mistake online.

"Once I transferred money from the Royal Bank to the Nat West, which is now one large bank, and I was still charged a fee and everything. So if you are sitting in front of a computer trying to do all this there is a bit of a fear that you are not going to know what's going on really. They know because that's their job." (A, Female)

"You could hit a button on the Internet and do something really stupid. You want to be able to go into a bank and sort it out with someone who knows what they are doing rather than sit looking at a TV screen and hope and trust and pray that that is what it's going to do." (L, Female)

These findings are consistent with research by Broderick and Vachirapornpuk (2002: 329) that found that "the expectations clients held of staff increased rather than decreased with online banking".

The fear of "doing something stupid" can be considered a form of "performance risk" where the service received will fail to meet the requirements of the customer. Participants identified that service failure can be attributed to actions taken either by the bank or by the consumer. Meuter et al (2000) undertook a critical incident analysis of 823 US consumer reports of their experiences of SST use in a wide range of consumption contexts. They find that in only small number of instances (4%) did

the consumer acknowledge that failure was due to their actions whilst (17%) were accredited to failure in organisational processes. They note that “these failures can be disturbing because the customer has no idea that the transaction was not performed until later, when problems arise” (p 57).

However qualitative research amongst UK bank customers by Broderick and Vachirapornpuk (2002: 331) finds that consumers “tended to play very active roles “ in online transacting but research participants expressed a lack of confidence and “blamed themselves if they felt they had not followed through properly on instructions”. Thus there is an indication that in the context of financial services where consumer confidence is low then perceptions of performance risk will be a significant influence on adoption behaviour.

Within the groups there were some participants who were concerned about a generation gap between them and their parents, who were not confident users of the Internet:

Mum does not have a clue it would be nice to have some kind of tutorial. (S, Female)

Thus there was an expectation amongst participants that an excellent bank web site should have an online tutor to help inexperienced users.

In Focus Group B participants suggested that a confirmation e-mail would bring peace of mind that a transaction had been executed correctly:

“Problems can happen online I know someone who did it and it didn’t work out for them so they cancelled - Egg actually got it wrong. They got the interest rate wrong they got the amount wrong and this guy gave up on it. But I mean they should send you an e-mail saying, “Yes this is accepted” that sort of thing.” (D, Male)

“A bank web site should guide the customer all along the way to where the transaction is done and then confirm what has been done to get the confirmation, “Thank you your order has been processed.” (K, Male)

Participants associated a higher level of risk with online transacting and thus a confirmation e-mail was viewed as a risk-reducing attribute. The acceptance of an

automatically generated e-mail for online transacting contrasts with the negative attitudes within the focus groups towards follow-up e-mails after supplying personal details when searching for information, indicating an area for further exploration.

4.4.4.5 Security

Security was not a widespread concern and was mentioned as a barrier to adoption by only one participant:

“I don’t feel that Internet banking is good because everybody can see my financial information and this is exactly why I do not buy stuff from the Internet either. God knows what they are going to do with my credit card and stuff.” (T, Female)

However those who were committed to using the medium felt that the threat was no greater than using other electronic payment methods such as a credit card as the following exchange shows:

A (Female): “I know that some people are worried about giving their details online but at the end of the day my argument is that you give people your details over the phone and anyone can listen in there as well. So I don’t really have a problem with the whole security thing of the Internet.”

D (Male): “Plus most credit cards will offer you some sort of security anyway even though. Mine does if anyone uses it they will give you your money back if there is a problem.”

However whilst the security of online transacting was not discussed at length participants did discuss instances where lapses in security resulted in personal details becoming available. Participants particularly valued the speed and transparency of the response by the bank in this instance:

A (Female) : “Wasn’t there a case, I don’t know how long ago, about a bank whose people were going on the Internet? I think they just launched the site or something and they were coming up with different people’s details. Can you remember?”

C (Male): “Yes I remember this.”

A (Female): “Was that Barclays?”

C (Male): "Yes I think it was Barclays. They had a list of 500 bank account details that someone had just seen and then the guy that found it, they were lucky because he was quite an honest guy, and he just told them. And they paid every single person on the list £50 compensation or something and it cost them a lot of money."

A (Female): "Um good I suppose in that respect. But I mean they were very open about it because I think the worst thing would be to try to hide it because if it had got out then people would lose confidence. But they said, "Yeah we admit the site has just come up and we had a problem but we will try and sort it out." I think people have a lot more confidence if something does go wrong if you are open about it as opposed to trying to sweep it under the carpet."

Within the online banking literature Lichtenstein and Williams (2006) also find in a qualitative study conducted amongst 32 Australian consumers that consumers distrust banks "to do the right thing" in terms of rectifying mistakes. This extract of the focus group discussion shows respondents responding positively to the actions taken by the bank affected by the security breach. Thus whilst participants did not discuss security concerns in detail this exchange emphasises that expectations that an online bank will provide a secure connection remains an important factor in the decision to adopt online banking.

When discussing specific security measures one participant found that having to remember a password was a barrier to using online banking:

"To begin with it took me quite a long time to register because they ask one million questions for security reasons. Then you have to remember about all of the one million passwords to use the banking services. I haven't used it ever because I can't remember my password." (T, Female)

Another participant commented on how she found that security procedures increased transaction time but that she also recognised the need for the security procedure:

"I know that you have passwords in the telephone banking but in the online banking it seems to be a lot more. At every stage you get to a 4-digit password into the 3rd digit of your second password and the first letter of your next password and you are like "Oh just hurry it along". You have to think to yourself "That's protecting me from other people looking at it and one more barrier security-wise" but it does take quite a long time" (L, Female).

Thus it emerged that whilst security measures were important they were also considered an inconvenient feature of online banking. Participants placed value on a bank web site being clear on the security arrangements that it had in place. However limited value was placed on the requirement to supply a username or a password in the context of information seeking indicating a possible area of task difference.

The ambivalence felt towards security features is an example of a technological paradox (Mick and Fournier 1998) where the provision of a web site attribute reduces the efficacy of another. In this instance the provision of security attributes is perceived as reducing accessibility. Thus for these participants a secure web site is considered an inaccessible web site. In the earlier discussion when information seeking participants felt antipathy towards web sites that required personal details before granting access, it is of interest to investigate whether the requirement to supply a username/ enter a password is also viewed in the same way.

4.5 Section Summary

From the focus groups a range of normative expectations were formulated. Findings indicated that participant expectations of web site, provider and service characteristics were broadly consistent with the extant research however the range of attributes found for information provision was greater. Table 4.4 provides an overview of how the focus group findings were used to compile a list of 30 questionnaire items for use in Phase 2. The first column provides an illustrative quote from the Phase 1 research and the second column lists the questionnaire item that was formulated for further investigation.

There is a clear expectation amongst focus group participants that any web site should be quick to download. Related to the need for speed there were expectations that a web site would have tools to assist with ease of navigation and search efficiency (search engine, site map, online tutor). Participants also commented on how, in the context of general Internet search activity, links to other web sites, “flashy graphics” and “pop-up ads” reduced search efficiency and increased temporal risk. In terms of the use of graphics and pop-up ads these criticisms were repeated when discussing a bank’s web site however some participants seemed to welcome

the inclusion of links to other organisations to support the credibility of pricing information.

In terms of the nature of information to be found on a bank's web site there were expectations for both pre-purchase information and on-going information on bank processes. Participants identified the information that they required to make a decision on whether or not to open a current account with a particular bank. This included details of branch locations and a range of charges (overdraft, interest and foreign exchange rates). In terms of pricing information, participants felt an excellent bank web site should provide some price comparisons; however there were some doubts over whether this information would be reliable. In terms of on-going information, participants indicated that they would like details of various processes and procedures such as: when charges apply, who to complain to and how to make a complaint.

When discussing the nature of online information comments were made about the quality and currency of the information found online. Participants indicated that they valued up-to-date information with sufficient detail to facilitate decision making without having to visit a bank branch. However in contrast to the desire to remotely access financial services information, there was a preference amongst some group members for support by branch staff when conducting transactions or making a final decision about a financial product. In addition there were others who felt that human interaction was inevitable and that no online financial transaction could be completely self-service.

Participants commented on their fears of making a mistake, which is identified as a form of performance risk. Focus group members outlined a range of measures that they expected to be available to them to give them support when conducting online transactions. These measures included: the facility to use online banking at a branch location, the ability to contact branch staff by e-mail, automatic confirmation e-mails and a frequently asked questions page.

Table 4.4 Focus Groups Comments and Questionnaire Items

Focus Group	Questionnaire Item
“They just take ages to download” (C)	Quick to download
“A good search engine “(S) “A site map would be a good thing (A) “It would be nice to have some kind of tutorial”(S)	Site has a search engine Site is easy to use Site has a site map Site has an online tutor to explain how to use the web site.
“Everybody can see my financial information”(T) “They want personal information before you can go any further”(L)	Site has details of security arrangements for banking online. Site has a requirement to register before supplying information
“For my tastes personally there are too many colours it is too flashy” (D)	Site has flashy graphics Site has pop up windows
“I would want to know exactly what charges are for when, when they apply”(Q) “How do you pay money in?”(C)	Site has details of overdraft facilities Site has details of when bank charges apply Site has details of how to pay money in Site has details of how to transfer money between accounts
“You want to see accounts, credit services mortgages, click on mortgages.”(D)	Site has sufficient information to decide to purchase a service without getting more information from elsewhere
“If they could list their interest rates and their competitors interest rates.”(Q) “How much money you charge for going a penny over” (L)	Site has details of current Interest rates being offered Site has details of competitors interest rates Site has details of bank charges Site has details of foreign exchange rates Site has details of commission charged for foreign exchange
“A frequently asked questions page ..you could post your question” (S) “When to complain .. to a bank”(Q) “I..want to ask a question and have some nice little person e-mail you back “(L) “The opportunity of ordering.. a .. brochure”(K)	Site has a frequently asked questions page Site has contact details for complaints Site has the facility to send in questions by e-mail Site has the facility to order brochures and more detailed information online
“Links to neutral organisations” (S) “Information either it is .. up to date or outdated” (L)	Site links to other web sites such as Which? and other consumer organisations. Site has daily updates
“It would be good if the branch had a computer monitor set up”(L) “The number of branches around Edinburgh” (L)	Is available in branches via a special terminal Site has details of how many bank branches there are. Site has details of locations of branches Site has all banking needs included in menu options
“As a student I would look for things like overdraft facilities, switch card, cheque”(L)	Site has details of special packages available for students.
“A bank web site should ..confirm what has been done” (K) “If I go into a company’s web site like Morgan Stanley ..I will actually receive an e-mail from them .. this is not good” (D)	E-mail to confirm a transaction

When discussing opening an online account there was a clear gap in the knowledge of some participants over how such an account would operate and thus it can be concluded that this information might be expected on a bank's web site. Participants also commented on how they anticipated financial services information would be complex and that their experience of reading complex information "on screen". Thus, in order to help facilitate understanding, participants expected to be able to download brochures from a bank's web site.

There were mixed perceptions of the risk associated with using a bank's web site. Physical risk is defined as the probability of harm or injury (defined for the online context by this thesis to be vulnerability to financial loss from theft or fraud). Some participants did not feel that online transacting posed any greater risk than any other remote channel whilst others expressed concern that their personal details might be subject to unauthorised access. Participants shared an anecdote about a lapse in security by a UK bank and placed particular value on the speed and transparency of the remedial action taken by the institution. Thus there is an expectation that a bank web site should contain information on its security arrangements.

Focus group discussion indicated that there might be differences in expectations according to the level of Internet experience and product knowledge that consumers enjoyed. For example participants identified that they had learnt to ignore advertising, avoid links and target their search using search engines. Thus it can be suggested that experts will have higher normative expectations compared to novice users for the presence of search engines and site maps. In addition the influence of experience and skill might also influence expectations of online features such as moving or flashy graphics. In contrast participants did not refer to their gender as an influence on their search activity neither did responses show any marked differences between gender groups. Exploration of these differences will be developed in Phase 2 and 3.

There was criticism within the focus groups that banks had not properly researched consumer needs before developing a web site. In general whilst focus group participants valued the Internet as being fast, cheap and free of temporal and geographical constraints they had low predictive expectations of the degree of ease

by which they would be able to access information of any quality. It will be of interest to explore the gap between predictive and normative expectations of bank web site information. Thus Phase 3 may find that consumers have low predictive expectations for the information content of a bank web site in terms of increasing their understanding of financial services.

Focus group participants discussed their hybrid shopping patterns; namely how they searched for information online and purchased offline. This provides support for conducting a finer-grained approach to the study of web site attributes that distinguishes between search and transaction activity. The focus group discussion indicated that there might be differences in normative expectations according to whether the purpose of the online visit was for information seeking or account access.

For example, one participant noted that she found passwords inconvenient whilst recognising the need for this security requirement in terms of account access. However when discussing information search activity participants viewed requests for personal details unfavourably and even resorted to using a false identity, one participant in particular felt that a bank should not request personal details when he visited the web site. Thus whilst a bank customer might expect to give personal details to access their account they may not wish to do so when seeking information. In addition participants expressed a desire for an automatically generated confirmation e-mail; this contrasts with the negative attitudes within the focus groups towards follow-up e-mails after supplying personal details when searching for information. Thus the difference in expectations across task scenario warrant further exploration.

There was evidence in the focus groups that Internet connectivity influenced use. However as noted in the focus group discussions the provision of computing facilities at a University are very different from those experienced in the general population. For example, several applicants noted that they were anticipating the provision of a "Resnet" service to their halls of residence. This is a service provided by the University computing services and provided through the University servers.

Therefore it was decided to explore the influence of broadband access in the Phase 3 survey.

The purpose of Phase 1 was to gain insight into the area of study and to generate a set of evaluative criteria grounded in the experience of users that could be explored further in Phases 2 and 3. The nature and content of the exchanges reported here underline the value of conducting focus groups. The focus group instrument captured information on social interaction that would not have been possible within an individual interview collection instrument. A limitation of this technique is that whilst it helped to develop a detailed and deep understanding of influences upon behaviour, “it is impressionistic rather than conclusive; it probes rather than counts” (Chisnall 2001). Thus the Phase 2 quantitative study was planned in order to understand the generalisability of these findings to begin to quantify and to explore the extent of the relationships between variables within the student population before proceeding Phase 3.

Section II Phase 2 Preliminary Survey

4.6 Section Introduction

Phase 2 uses the findings from the Phase 1 study as a foundation to quantify and explore consumer expectations of a bank web site in the context of information search. The Phase 2 study addresses the following research questions:

- To what extent do the expectations of attributes generated within the focus groups correspond with the expectations of a wider range of individuals?
- Can these expectations be grouped by response into meaningful dimensions?
- How do these dimensions compare to extant research on account access?
- Are there differences in expectation according to socio-demographic variables?
- Are there differences in expectation according to previous online experience?
- Are there differences in expectation according to product knowledge?

This section details the data collection, the data preparation, the analysis and the findings for the Phase 2 questionnaire.

4.7 Data Collection

Data was collected from a convenience sample of students. Convenience sampling is consistent with the exploratory aims of the research and the techniques chosen. However it should be recognised that it is not valid to generalise the findings to a wider population (Blaikie 2003). However Punch (2003) notes that, despite this limitation, findings are capable of building knowledge. A discussion of the procedures for data collection and analysis is contained in Section 3.11. The survey was distributed in May 2001 in class at the beginning of tutorials and participants were allowed 10-15 minutes for completion. To discourage response bias tutors were asked to stress to students that there were no right or wrong answers. A total of 297 surveys were distributed to Business Studies students and 253 questionnaires were returned giving a response rate of 85%. Table 4.5. contains an overview of the nature

of the information gathered and the variables utilised, a discussion of question design and order is contained in the methodology section 3.11.

Table 4.5 Overview of Data Collected

Information	Variables
Socio-demographic	<ul style="list-style-type: none"> - Gender - Age - Year of study - Educational Attainment
Banking Behaviour	<ul style="list-style-type: none"> - Banks online - Has visited bank web site - Financial services knowledge
Internet Behaviour	<ul style="list-style-type: none"> - Number of hours of Internet use per week - Number of years of Internet use - Shops online
Expectation	<ul style="list-style-type: none"> - Normative expectation of bank web site attributes for information search

4.8 Data Preparation and Assessment

Questionnaires were coded and inputted as an ASCII file by a data entry service. All entries were double-checked for errors and then imported into SPSS V.14. An initial inspection of the data was performed using frequency analysis (Robson 1993). The data was screened for missing values and outliers in terms of age and year of study. Seventeen outlying cases in terms of age and year of study were identified. Fifteen cases were removed on the basis of non-first year status and two cases on the basis of age. No single case had more than 2 variables with missing data. Thus a sample of 236 participants was achieved.

Descriptive analysis was used to examine the composition of the sample (Appendix IX). The mean age of respondents was 18 and three-quarters. The sample was 52.5% male and 48% female. The majority 65% (n=151) of those surveyed used the Internet for less than 5 hours per week and had 1-3 years prior experience. However only a minority of respondents shopped online (37.7%, n=89) or banked online 21% (n=49) although a greater number (42%, n=100) had visited a bank web site at some

point. The majority of respondents (46.2%, n=108) considered that they had “Average” levels of financial services knowledge. The descriptive analysis of the findings indicated that the level and nature of response was sufficient to proceed.

4.9 Findings

The first stage of analysis explored the degree to which the expectations of bank web site attributes corresponded with those views expressed in the focus groups. Descriptive analysis was used to rank the variables according to mean score and then exploratory factor analysis was used to identify whether expectations could be meaningful grouped and thus provide an indication as to whether there was evidence of underlying evaluative dimensions (Bryman and Cramer 2001). These results have been reported in Waite and Harrison (2002) and Waite and Harrison (2004) (Addendum).

Respondents were asked to indicate their expectations of bank web sites as a source of information. The questionnaire provided the statement “A bank site would deliver excellent online information if it had the following features” and 30 variables derived from Phase 1 were listed. Respondents indicated on a 5 point Likert Scale ranging from “strongly agree” which was given a rating of 5 to “strongly disagree” which was given a rating of 1. The label “neither” was attached to the mid-point 3.

Items were ranked by mean score (Table 4.6). Since “strongly agree” had the highest numerical value (5), ranking the data by mean scores clearly identifies the attributes respondents most expected to be a feature of an excellent bank web site. Overall, only one variable “pop-up windows” was consistently valued below 3, indicating that respondents wished to reject the feature. This is consistent with focus group findings where participants felt that this feature reduced search efficiency. “Flashy graphics” are also ranked at the bottom of the list.

As discussed previously these attributes are considered to contribute to web site attractiveness (Chen and Wells 1999) but generally attracted criticism in the focus groups for being time wasting and intrusive. These findings support the conclusions drawn from the focus group research that entertainment features are not considered

appropriate for a bank web site when searching for information. This indicates that in certain contexts utilitarian aspects of web site design are valued more highly by users than hedonic features (Raman and Leckenby 1998, Wolfenbarger and Gilly 2003, Joseph and Stone 2003).

A further item is ranked towards the bottom of the list: this is the requirement to register before being supplied information. As discussed previously, this may be associated with a risk to privacy in the context of information search. However, responses to this variable were fairly evenly divided with 45.5% either agreeing or strongly disagreeing and 40.4% either disagreeing or strongly disagreeing. Findings from the focus groups indicated that some participants felt that supplying personal information was a form of payment for free information online whilst some individuals may find the provision of personal details an invasion of privacy. In addition in the context of a bank web site other participants noted that these measures were a necessary security measure although the requirement to supply a password reduced the ease by which they could search for information. It will be of interest to examine in Phase 3 how responses to this item are related to risk perceptions.

Table 4.7 shows that the top two attributes expected to be present are “ease of use” and the “provision of security details for online banking”. “Details of special packages for students” and “details of bank charges” are ranked equally in third place, and the two attributes jointly occupying the fourth place are “quick download” and the “provision of current interest rates”. Thus, it would appear that respondents expect an excellent bank web site should offer both accessible and targeted information. This supports the focus group findings. Focus group participants stated that they valued the speed and ease of the Internet for information search and there were strong indicators that a bank web site should provide information on service pricing and processes.

Table 4.6 Expectations Ranked by Mean Score

	n	Mean	SE	SD	Min	Max
Easy to use	233	4.77	0.05	0.59	1	5
Details of security arrangements for online banking	232	4.63	0.06	0.63	1	5
Details of special student packages	233	4.57	0.06	0.63	1	5
Details of bank charges	233	4.57	0.05	0.63	1	5
Quick to download	233	4.53	0.06	0.65	1	5
Details of current interest rates being offered	233	4.53	0.05	0.58	1	5
Details of how to transfer money between accounts	232	4.51	0.05	0.66	1	5
Details of when bank charges apply	233	4.48	0.05	0.71	1	5
Facility to send in questions by e-mail	233	4.48	0.06	0.68	1	5
Details of overdraft facilities	232	4.42	0.05	0.66	1	5
Have contact details for complaints	232	4.39	0.06	0.84	1	5
Details of how to pay money in	233	4.32	0.05	0.83	2	5
Have all banking needs included in menu options	234	4.27	0.06	0.83	1	5
Have a search engine	233	4.22	0.06	0.96	2	5
Have a site map	231	4.18	0.07	0.78	1	5
Daily information updates	233	4.17	0.06	0.95	1	5
Details of competitors' interest rates	231	4.15	0.06	0.97	1	5
Facility to order brochures and more detailed information online	232	4.12	0.07	0.75	1	5
Commission charged for foreign exchange	231	4.09	0.06	0.86	1	5
Foreign exchange rate details	233	4.07	0.05	0.89	1	5
Sufficient online information to decide to purchase	233	4.06	0.06	0.83	1	5
Details of branch locations	233	3.97	0.07	0.91	1	5
Frequently Asked Questions Page	233	3.76	0.06	1.15	1	5
Available in branches via a special terminal	233	3.49	0.07	0.99	1	5
Links to other web sites such as Which? and other consumer organisations	233	3.38	0.07	1.07	2	5
Have an online tutor to explain how to use the web site	233	3.35	0.07	1.06	1	5
Details of how many branches there are	232	3.25	0.07	1.12	1	5
Have a requirement to register before supplying information	233	3.15	0.09	1.50	1	5
Have flashy graphics	232	3.05	0.06	0.86	1	5
Have pop-up windows	233	2.99	0.07	1.15	1	5

4.9.1 Dimensionality of Normative Expectations

The next stage of the analysis employed exploratory factor analysis to examine whether it was possible to group expectations according to response into higher order evaluative dimensions that were meaningful and distinct when compared to research that had as its focus account access.

Before proceeding the data was examined for its suitability according to the procedures discussed in Appendix VI. The ratio of cases to variables is 8:1, which exceeds the required ratio of five respondents per variable, (Hair et al. 1998). The KMO test of sampling adequacy was 0.88, which is considered “great” (Field 2007). The factor analysis comprised of principal factor analysis, orthogonal rotation and an item selection criteria which selected those items with a correlation greater than 0.30. This resulted in items being unique to each factor. A scree plot of the factor solution was also considered and it can be seen that the cut-off point, where the slope of the line becomes horizontal, begins at Factor 7 (Figure 4.1). Thus seven factors with an eigenvalue greater than 1 were identified accounting for 61% of the variance before rotation. In social sciences a factor solution that accounts for 60% or more of the total variance is considered satisfactory (Hair et al 1998).

Figure 4.1 Scree Plot of the Factor Solution

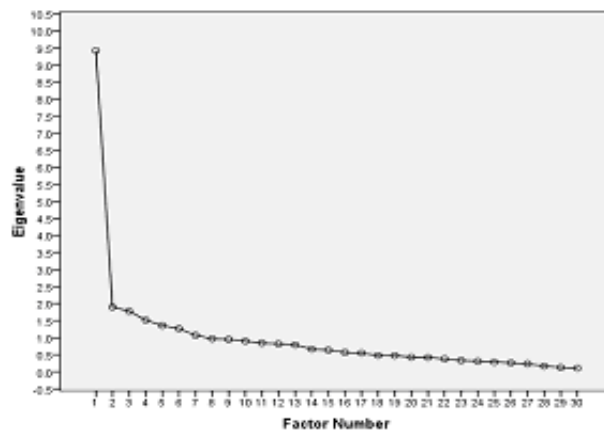


Table 4.7 lists the items under each factor together with the rotated factor score, the eigenvalue, the percentage of the variance explained and the reliability measure computed using Cronbach’s Alpha. Three items “Daily information updates” and

“Sufficient information to decide to purchase” and “Links to other web sites such as Which? and other consumer organisations” were excluded from subsequent analysis due to a factor score of less than 0.30 and an improvement in the alpha score upon deletion. These items are italicised. Despite the deletion of these items the alpha scores of only four factors exceed the cut-off of 0.70 and thus three factors are not internally reliable (Hair et al 1998).

Each factor was given a “short title that captures the content of that particular set of items” (Blaikie 2003: 232). The factors were labelled after an examination of the variables with the higher loadings and with consideration of the focus group responses to reflect the qualitative dimensions of this technique (Stewart 1981, Hair et al 1998). For example, Factor 1, “Transaction Technicalities” reflects the comments made by the participants on their concerns regarding the delivery of a banking service and the high loadings on the timing and extent of transaction charges. Factors relate to information provision (what is provided), the way that web site functionality (how it is provided) and the characteristics of the financial services organisation, such as responsiveness and geographical spread (who is providing). These factors can more fully explained as follows:

Factor 1 Transaction Technicalities. The expectations are for information on the technicalities of frequently conducted transactions. Financial services have been typified as an “on-going” service encounter because of these regular transactions between institution and customer (McKechnie and Harrison 1995). It is also of interest to note that Factor 1 explains the greatest proportion of the variation in response. The focus group discussion in Phase 1 emphasised that participants were uncertain of how an online bank account would operate and these items can also be interpreted as addressing this information gap amongst participants. In the light of this evidence it is to be anticipated that these attributes would be grouped together.

Table 4.7 Exploratory Factors

	<i>Rotated Score</i>	<i>Eigen value</i>	<i>% explained</i>	<i>Alpha</i>
Factor 1 Transaction Technicalities		9.53	31.8	0.87
Details of when bank charges apply	0.82			
Details of bank charges	0.81			
Details of overdraft facilities	0.58			
Details of how to transfer money between accounts	0.55			
Details of how to pay money in	0.49			
<i>Daily information updates</i>	<i>0.29</i>			
Factor 2 Decision Making Convenience		1.90	6.33	0.86
Easy to use	0.81			
Quick to download	0.70			
Details of current interest rates being offered	0.59			
Details of special student packages	0.58			
Details of security arrangements for online banking	0.52			
Details of competitors' interest rates	0.48			
<i>Sufficient online information to decide to purchase</i>	<i>0.29</i>			
Factor 3 Interactive Interrogation		1.75	5.83	0.76
Have contact details for complaints	0.73			
Facility to send in questions by e-mail	0.70			
Frequently Asked Questions Page	0.45			
Facility to order brochures and more detailed information online	0.39			
Factor 4 Speciality Information		1.51	5.02	0.91
Foreign exchange rate details	0.82			
Commission charged for foreign exchange	0.81			
Factor 5 Search Efficiency		1.33	4.45	0.65
Have a search engine	0.62			
Have a site map	0.61			
Factor 6 Physical Back-up		1.26	4.19	0.57
Details of how many branches there are	0.73			
Details of branch locations	0.63			
<i>Links to other web sites such as Which? and other consumer organisations</i>	<i>0.26</i>			
Factor 7 Technology Thrill		1.09	3.62	0.52
Available in branches via a special terminal	0.49			
Have flashy graphics	0.43			
Have all banking needs included in menu options	0.41			
Have pop-up windows	0.37			
Have an online tutor to explain how to use the web site	0.32			
Have a requirement to register before supplying information	0.31			

The prominence given to information on retail banking processes is consistent with previous research (i.e. Gupta and Torkzadeh 1988, Zineldin 1996, Devlin and Gerrard 2004). In addition it is of interest to note that many of these items refer to costs that the consumer may incur. Previous research has indicated that price is not an influence on online banking adoption in terms of account management (Devlin and Yeung 2003). Thus it may be that the presence of pricing information is an influence on a consumer intention to use a bank web site for information search.

Factor 2 Decision Making Convenience. The expectations are for speed in operation, that the information is targeted to the customer's own needs, that comparisons can be made and that requirements for successfully undertaking transactions are known. This grouping is consistent with the Phase 1 finding that there are expectations that information should be easy to find and quick to access. Ease of use and accessibility have been recorded as key satisfiers by previous research into online banking (i.e. Jun and Cai 2001, Jaywardhena 2004). These results highlight this dimension as one of the key dimensions of normative expectations for information search and indicate a possible area of commonality across the two task scenarios.

It is interesting that as well as requiring information on financial services products the participants also required information relevant to the medium, namely the security of online banking. Thus whilst the focus group participants did not highlight security concerns the Phase 2 findings are consistent with online banking research that indicates that security fears are a significant barrier to online banking adoption (Sathye 1999, Gerrard and Cunningham 2003, Lee et al 2005).

Factor 3 Interactive Interrogation. The expectations are for institutional contact details, an e-mail facility, a page for frequently asked questions and online brochure ordering. Research by Gallagher et al (2001) shows that Internet users value the enhanced communication capability of the Internet and evaluate web sites that do not match that expectation more negatively than ones that do. Thus it appears that consumers expect that a web site should have the potential to facilitate communication with bank staff.

Financial services research indicates that the responsiveness of personnel is a significant factor used by customers in determining service quality (Laroche et al 1986, Avkiran 1999, Kaynak and Harcar 2005). For example, Howcroft et al (2003: 1010) in a series focus groups amongst UK bank customers find that the youngest participants “tended to go their banks for assistance..[and]..were looking to the third party to simplify the decision-making process”. In addition in a survey of 1,951 Australian bank customers, Baumann et al (2007) found that responsiveness and overall satisfaction were significant predictions of customer intention to remain with a bank in the next 6 months. Thus this finding is consistent with the wider financial services literature.

Factor 4 Speciality Information. The expectation is for information that relates to a particular but discrete need i.e. taking a holiday, as opposed to ongoing financial service needs such as a cheque account. In addition to seeking information on a broad level about key processes, participants also seek information about specialised products that are related to a specific situation i.e. seeking foreign currency. This survey was conducted prior to the summer vacation period which might have biased the results.

Factor 5 Search Efficiency. The expectation is for the presence of tools to facilitate the search process i.e. a search engine and a site map. In Phase 1 respondents identified that tools such as search engines simplified and reduced the time and effort related to search activity. Information system research has shown that the use of search engines increases individual control over search activity, saves time and encourages extended use (i.e. Russo and Leclerc 1991, Van Raaij 1998). No other online banking study was located that identified the presence of these search tools as a distinct factor. For example, Jayawardhena (2004: 190) when measuring the web site interface quality captures responses to navigation using the item: “navigating with Bank X’s web site is very easy, hyperlinks and pages are logically laid out”.

Factor 6 Physical Back-up. These results indicate that consumers have expectations for information on traditional channels. An examination of the focus group findings showed that web sites that were integrated with a branch network were valued. Research has also shown that the convenience of a branch location is

an important determinant in bank selection (Lee and Marlowe 2003). In terms of online banking adoption, White and Nteli (2004) found evidence of two cluster groupings amongst 56 Internet banking customers. One group were security sensitive and valued the option of using a branch network and one group who were convenience orientated and did not place the same value on having the option of a traditional banking network. Thus for some consumers it appears that provider characteristics play an important role in deciding whether to adopt online banking and expect that this information should be present on a bank web site.

Factor 7 Technology Thrill. The expectations are for terminals to be available in branches, for web sites to have flashy graphics, pop-up windows, online tutoring and a requirement for pre-registration before use. The highest loading is for a web site to “be available in branches via a special terminal”. Lack of familiarity with online banking was discussed in the focus groups and this measure together with the supply of an online tutor was considered as a risk-reducing measure that increased the trialability of the medium. Thus it is consistent that these measures should be grouped within the same factor and have been reported by Joseph et al (1999) as a feature that would facilitate the adoption of online banking.

The other items within this factor reflect “multi-media friendliness” identified as an advantage of the medium by Ainscough and Luckett (1996: 37). For example, several studies discussing the features of successful web sites emphasise that providing fun and entertainment is a vital in encouraging repeat visits (Dholakia and Rego 1998, Liu and Arnett 2000). In addition, presenting information in a stimulating and appealing way has been shown to increase the likeability of television advertising (McKechnie and Leather 1998). Thus the use of colourful graphics and animation by a bank might also create a positive response amongst web site visitors. Internet technology also enables the capture of consumer information that can subsequently be used to improve customer relationship management. The ability of a web site to develop a marketing database in this way has been viewed as a key success factor (Peppers et al 1999). Hence these items represent a range of the distinct and innovative marketing techniques associated with the medium.

It is of interest to note that whilst the focus group participants placed value on the risk-reducing measures that can be offered on a bank web site in general they revealed a negative attitude towards the use of the medium for the collection of personal details and interactive advertising. All the items in this factor can be grouped as distinct technological attributes of a web site. However the focus group finding indicates that consumer expectations of these attributes might range from positive to negative and differ according to confidence in use of the Internet medium. It can thus be argued that the low alpha for this dimension reflects ambivalence in response.

4.9.2 Differences According to Individual Characteristics

The next stage of the examination was to explore differences in expectation according to socio-demographic and behavioural variables using a reduced set of variables. Consideration was given to how the results of the factor analysis could inform this analysis and it was decided to use a surrogate variable for each factor as opposed to using the factor scores estimates or summing values within each dimension.

Whilst factor scores represent a composite of all variables this method was rejected due to the degree of indeterminacy associated with factors derived from principal factor extraction (Lastovicka and Thamodaran 1991). This means that scores cannot be calculated only estimated. A summated scale was not considered appropriate given the low alpha scores of Factors 5-7, which is an indication of poor reliability. Hair et al (1998: 120) advise that: "if the summated scale is untested and exploratory, with little or no evidence of reliability or validity, surrogate variables should be strongly considered".

It is acknowledged that there is a risk of misleading results in using a single variable to represent a more complex result and that this technique does not address the issue of measurement error when using a single measure (Hair et al 1998). However this limitation is considered acceptable given the exploratory and preliminary nature of the research and the philosophical orientation of the researcher towards accepting that no knowledge can be known with certainty but must constantly be assessed

critically. Thus for each factor the item with the highest factor loading was selected for the application of other statistical techniques

An examination was conducted into the extent that the scores for each expectation dimension varied according to individual differences specifically socio-demographic characteristics, Internet activity and product knowledge. The findings are discussed in each of the following sub-sections.

4.9.2.1 Differences According to Age and Gender

Table 4.8 contains the results of independent t-tests for each of the expectation items and gender: no statistically significant differences are indicated between groups. The relationship between age and expectations was examined using correlation analysis. The results are in Table 4.9. It can be seen that no statistically significant relationship was identified. Given that the age range of the sample was only 5 years this is largely to be expected.

Table 4.8 T-Test: Expectation and Gender

Expectation	Gender	n	Mean	SD	SE	MD	t	Sig.
Details of when bank charges apply	Male	124	4.39	0.73	0.07	-0.11	-1.10	.27
	Female	109	4.50	0.78	0.07		231	
Easy to Use	Male	124	4.67	0.82	0.07	-0.14	-1.46	.15
	Female	109	4.81	0.62	0.06		226	
Have contact details for complaints	Male	124	4.26	0.92	0.08	-0.01	-0.10	.93
	Female	108	4.27	0.86	0.08		230	
Foreign exchange rate details	Male	122	3.90	0.96	0.09	-0.01	-0.05	.96
	Female	109	3.91	0.93	0.09		229	
Have a search engine	Male	124	4.03	1.08	0.10	-0.04	-0.29	.77
	Female	109	4.07	1.01	0.10		229	
Details of how many branches there are	Male	124	3.31	1.08	0.10	-0.10	-0.64	.53
	Female	109	3.40	1.05	0.10		230	
Available in branches via a special terminal	Male	123	3.46	1.07	0.10	-0.06	-0.52	.62
	Female	109	3.52	0.97	0.09		231	

Table 4.9 Correlation: Age and Expectation

Expectation	r	p
Details of when bank charges apply	0.05	.48
Easy to Use	-0.01	.87
Have contact details for complaints	0.09	.17
Foreign exchange rate details	0.09	.16
Have a search engine	-0.02	.75
Details of how many branches there are	-0.12	.06
Available in branches via a special terminal	-0.05	.42

Previous discussion has identified that there is mixed evidence as to the impact of socio-demographic influences on online banking behaviour. The findings of this research are consistent with other studies that used student samples which found no link between age or gender and online banking adoption (i.e Lassar et al 2005, Lai and Li, 2005, Awamleh and Fernandes 2006). In this instance the findings indicate that for the participants of this survey normative expectations do not vary according to these individual characteristics.

4.9.2.2 Differences According to Internet Activity

Tables 4.10, 4.11 and 4.12 contain the results of independent t-tests for each of the expectation items and respondent online shopping, banking and prior bank web site visiting activities.

Table 4.10. T-test: Expectation and Online Shopping Behaviour

Expectation	Shops Online	n	Mean	SD	SE	MD	t df	Sig.
Details of when bank charges apply	Yes	89	4.53	0.68	0.07	0.15	1.44	.15
	No	144	4.38	0.79	0.07		231	
Easy to Use	Yes	89	4.81	0.56	0.06	0.12	1.23	.22
	No	144	4.69	0.82	0.07		229	
Have contact details for complaints	Yes	89	4.51	0.74	0.08	0.39	3.35	.00
	No	143	4.11	0.94	0.08		230	
Foreign exchange rate details	Yes	88	4.08	0.82	0.09	0.28	2.23	.03
	No	143	3.80	1.00	0.08		211	
Have a search engine	Yes	88	4.10	0.95	0.10	0.08	0.57	.57
	No	143	4.02	1.10	0.09		229	
Details of how many branches there are	Yes	89	3.30	1.10	0.12	-0.09	-0.59	.55
	No	144	3.39	1.05	0.09		231	
Available in branches via a special terminal	Yes	88	3.50	1.10	0.12	0.02	0.15	.88
	No	144	3.48	0.96	0.08		230	

Table 4.10 shows that those who have shopped agree more strongly that the following attributes should be present: “contact details for complaints” and “foreign exchange rate details”. These measures are surrogates for items grouped according to the dimensions of “Interactive Interrogation” and “Speciality Information”. These expectations are consistent with the focus group discussion where participants noted that they searched for pre-purchase specific information online. In addition experienced shoppers place value on the ability to contact bank personnel for post-

purchase guidance. This suggests that those who are confident with making online shopping transactions value the ability to interact with the online provider.

Table 4.11 shows that those who have banked online agree more strongly that the following attributes should be present: “ease of use”, “contact details for complaints” and “details of how many branches there are”. These measures are surrogates for items grouped according to the dimensions of: “Decision making convenience”, “Interactive Interrogation” and “Physical back-up”.

Table 4.11 T-test: Expectation and Online Banking Behaviour

Expectation	Banks Online	n	Mean	SD	SE	MD	t df	Sig.
Details of when bank charges apply	Yes	48	4.58	0.58	0.08	0.18	1.51	.13
	No	185	4.40	0.79	0.06		231	
Easy to Use	Yes	48	4.92	0.35	0.05	0.23	1.94	.05
	No	185	4.69	0.80	0.06		179	
Have contact details for complaints	Yes	48	4.54	0.82	0.11	0.35	2.46	.02
	No	184	4.19	0.89	0.07		230	
Foreign exchange rate details	Yes	46	4.11	0.97	0.14	0.26	1.65	.10
	No	185	3.85	0.93	0.07		229	
Have a search engine	Yes	47	4.13	1.15	0.17	0.10	0.55	.58
	No	185	4.03	1.02	0.08		229	
Details of how many branches there are	Yes	48	3.06	1.12	0.16	-0.37	-2.16	.03
	No	185	3.43	1.04	0.08		231	
Available in branches via a special terminal	Yes	48	3.33	1.08	0.16	-0.20	-1.17	.24
	No	184	3.53	1.01	0.07		230	

Table 4.12 shows that those who have visited a bank web site agree more strongly that the following attributes should be present: “foreign exchange rate details” and “a search engine”. These measures are surrogates for items grouped according to the dimensions of “Speciality Information” and “Search Efficiency”. Consumer behaviour research shows that experienced users of a product or service know more about its capabilities and therefore have higher expectations, (Johnson and Mathews 1997). Studies into online banking behaviour have also indicated that experienced and novice web site users differ in their perceptions of web sites (Tan and Teo 2000, Black et al 2001, Lichtenstein and Williams 2006). The findings of the Phase 2 study present an indication of those areas where web site expectations vary according to three measures of previous experience and thus provide detail on those particular areas of difference.

Table 4.12 T-Test: Expectation and Bank Web Site Visitor

Expectation	Web site Visitor	n	Mean	SD	SE	MD	t df	Sig.
Details of when bank charges apply	Yes	99	4.48	0.71	0.07	0.06	0.65	.51
	No	133	4.42	0.76	0.07		230	
Easy to Use	Yes	99	4.77	0.59	0.06	0.06	0.62	.54
	No	133	4.71	0.83	0.07		230	
Have contact details for complaints	Yes	99	4.39	0.84	0.09	0.22	1.87	.06
	No	132	4.17	0.91	0.08		229	
Foreign exchange rate details	Yes	97	4.07	0.89	0.09	0.28	2.27	.02
	No	133	3.79	0.96	0.08		228	
Have a search engine	Yes	97	4.22	0.96	0.10	0.29	2.10	.04
	No	133	3.92	1.09	0.08		228	
Details of how many branches there are	Yes	99	3.25	1.12	0.11	-0.18	-1.30	.20
	No	133	3.44	1.03	0.09		230	
Available in branches via a special terminal	Yes	98	3.49	0.99	0.10	0.00	0.01	.99
	No	133	3.49	1.06	0.09		229	

4.9.2.3 Differences According to Internet Experience and Frequency of Use

Table 4.13 contains the results of univariate ANOVA for each of the expectation items and frequency of use (weekly hours online). The low level of response in the category of 10+ hours (n=11) meant that these cases were re-coded as 8 or more hours per week. Homogeneity of variance results were non-significant for all but two items “easy to use” and “contact details for complaints”. In these instances the Welch F statistic was used as a robust test (See Appendix VI).

Differences in use frequency are present for three items: “Easy to use”, “Contact details for complaint” and “Foreign exchange rate details”. These measures are surrogates for items grouped according to the dimensions of “Decision Making Convenience”, “Interactive Interrogation” and “Speciality Information”. Post-hoc t-tests were used to make multiple comparisons between means for these items. Statistically significant differences were identified between group means for two items only: “Contact details for complaint” and “Foreign exchange rate details”.

Table 4.13 ANOVA: Expectation and Weekly Hours Spent Online

Expectation	Hours	n	Mean	SD	SE	F	df	Sig.
Details of when bank charges apply	< 2 hours	56	4.32	0.86	0.11	0.58	3,228	.62
	2-4 hours	94	4.46	0.68	0.07			
	5-7 hours	47	4.49	0.80	0.12			
	8 + hours	35	4.49	0.70	0.12			
Easy to Use	< 2 hours	56	4.61	0.89	0.12	2.68*	3,83	.05
	2-4 hours	94	4.88	0.36	0.04			
	5-7 hours	47	4.97	0.66	0.10			
	8 + hours	35	4.57	0.98	0.17			
Have contact details for complaints	< 2 hours	56	3.82	1.11	0.15	5.24	3,92	.00
	2-4 hours	94	4.31	0.66	0.07			
	5-7 hours	47	4.53	0.78	0.11			
	8 + hours	34	4.50	0.96	0.17			
Foreign exchange rate details	< 2 hours	55	3.44	1.00	0.13	7.58	3,226	.00
	2-4 hours	94	3.95	0.83	0.09			
	5-7 hours	47	4.26	0.87	0.13			
	8 + hours	34	4.03	0.97	0.17			
Have a search engine	< 2 hours	56	3.96	1.13	0.15	0.52	3,226	.67
	2-4 hours	93	4.14	0.93	0.10			
	5-7 hours	47	4.11	1.28	0.16			
	8 + hours	34	3.94	1.07	0.18			
Details of how many branches there are	< 2 hours	56	3.39	1.04	0.14	0.65	3,228	.59
	2-4 hours	94	3.29	0.97	0.10			
	5-7 hours	47	3.51	1.21	0.18			
	8 + hours	35	3.23	1.14	0.19			
Available in branches via a special terminal	< 2 hours	56	3.36	1.03	0.15	2.31	3,227	.08
	2-4 hours	93	3.52	1.01	0.10			
	5-7 hours	47	3.79	0.83	0.12			
	8 + hours	35	3.26	1.09	0.19			

*Welch F statistic

Those who used the Internet for less than 2 hours a week had lower expectations that contact details for complaint should be present on a bank web site compared to those who used the Internet for 2-4 hours (mean difference = -0.49, $p = .00$), those who used it for 5-7 hours (mean difference = -0.71, $p = .00$) and those who used it for 8 hours or more (mean difference -0.68, $p = .00$). There were no other statistically significant differences between groups.

Those who used the Internet for less than 2 hours per week had lower expectations that details of foreign exchange rates should be present compared to those who used the Internet for 2-4 hours (mean difference=-0.51, $p = .01$), those who used it for 5-7

hours per week (mean difference = -0.82, $p=.00$) and those who used it for 8 or more hours per week (mean difference = -0.59, $p=.01$). There were no other statistically significant differences between groups. Thus in general those who used Internet for more than 2 hours per week strongly agreed that: “Interactive Interrogation” and “Speciality Information” features should be present on a bank web site.

Correlation analysis was used to examine the relationship between length of use of the Internet and expectation (Table 4.14). These results show that length of use of the Internet is positively related to three items: “Details of when bank charges apply”, “Contact details for complaints” and “Foreign exchange rate details”. These measures are surrogates for items grouped according to the dimensions of “Transaction Technicalities”, “Interactive Interrogation” and “Speciality Information”.

Table 4.14 Correlation: Expectation and Year of Adoption

Expectation	r	p
Details of when bank charges apply	0.18	.00
Easy to Use	0.02	.79
Have contact details for complaints	0.25	.00
Foreign exchange rate details	0.19	.00
Have a search engine	0.12	.07
Details of how many branches there are	0.02	.76
Available in branches via a special terminal	-0.04	.59

There are several possible interpretations of these results. First that frequency of use increases expectations of the functionality of a web site. These results are consistent with research by Raman and Leckenby (1998) which found that intensive Internet users are more goal-directed. It can also indicate that consumers who are not frequent users are unable to conceptualise the benefits. In addition it may be that as consumers become more familiar with a product or experience their expectation increases.

4.9.2.4 Differences According to Product Knowledge

Table 4.15 contains the results of univariate ANOVA for each of the expectation items and self-rated product knowledge. Prior to performing these tests it was

decided to combine those who indicated poor and less than average knowledge due to the relatively low numbers identifying that their knowledge levels were poor (n=8). This new group was coded as “Less than average knowledge”. For consistency those with “good” (n=24) and “better than average knowledge” (n=56) were combined into one group coded as “Better than average knowledge”. Differences according to product knowledge were found for “Transaction Technicality” and “Decision-making Convenience”. However post-hoc tests did not identify any statistically significant difference between any comparison of group means.

These results are surprising since research indicates that a high level of product experience and knowledge increases information-seeking behaviour (Brucks 1985). For example Beales, et al (1981) argue that customers with high product experience are able to better appreciate the variance across products in the market place, thereby increasing perceptions of information utility. They also state that due to more experience of processing product-specific information consumers can search more efficiently, thereby reducing search costs. In terms of online information seeking, Jepsen (2007) in a sample of 251 Danish Internet users found that product interest is positively related to use of the Internet for information search.

An alternative explanation might be that the use of self-reported knowledge is not a valid measure. For example, Brucks (1985) notes that measures of subjective knowledge can indicate levels of self-confidence as well as knowledge levels and it could be that this is a reflection of respondent attitude towards this topic area. It was noted in the focus groups that admitting to a lack of financial sophistication was considered worthy of ridicule (i.e. being a “secret squirrel saver”) and thus the respondents could have been subconsciously or consciously reacting to peer pressure when completing their responses.

4.15 ANOVA: Expectation and Level of Product Knowledge

Expectation	Level of Knowledge	n	Mean	SD	SE	F	df	Sig.
Details of when bank charges apply	Better than Average	79	4.42	0.87	0.10	2.38	2,228	.10
	Average	107	4.53	0.60	0.06			
	Less than average	45	4.24	0.83	0.12			
Easy to Use	Better than Average	79	4.66	0.85	0.10	0.79	2,228	.45
	Average	107	4.79	0.56	0.05			
	Less than average	45	4.71	0.90	0.13			
Have contact details for complaints	Better than Average	77	4.37	0.11	0.11	1.90	2,227	.15
	Average	106	4.26	0.08	0.08			
	Less than average	45	4.04	0.14	0.14			
Foreign exchange rate details	Better than Average	77	3.87	0.11	0.11	0.52	2,226	.59
	Average	107	3.96	0.09	0.09			
	Less than average	45	3.80	0.14	0.14			
Have a search engine	Better than Average	78	4.13	0.12	0.12	0.81*	2,109	.45
	Average	107	4.07	0.10	0.10			
	Less than average	44	3.86	0.17	0.17			
Details of how many branches there are	Better than Average	79	3.19	0.12	0.12	2.68	2,228	.07
	Average	107	3.52	0.09	0.09			
	Less than average	45	3.22	0.18	0.18			
Available in branches via a special terminal	Better than Average	78	3.29	0.12	0.12	1.99	2,227	.14
	Average	108	3.54	0.10	0.10			
	Less than average	44	3.64	0.15	0.15			

*Welch F statistic

4.10 Section Summary

The Phase 2 research provides support for the Phase 1 findings. A ranking of mean expectation scores showed that participants valued attributes such ease of use and targeted information on service pricing and processes. There was also evidence that not all interactivity is good in the eyes of the consumer and that those features that can be classed as “Technology Thrill” are actively disliked. The divide over links indicates that consumers value some components of interactivity and not others.

Exploratory Factor analysis provides evidence that normative expectations for online information search can be grouped into meaningful dimensions. Seven factors were identified that related to information provision (what is provided), the way that web site functionality (how it is provided) and the characteristics of the financial services organisation, such as responsiveness and geographical spread (who is providing). A

comparison of these dimensions with extant research has indicated areas of congruence and contrast. For example, the prominence given to information on retail banking processes is consistent with previous research. However, no other online banking study has been located that identifies the presence of these search tools as a distinct factor.

Further exploration has indicated that for a student sample expectations do not differ according to age and gender or product knowledge. However there are differences according to Internet activity, experience and frequency of use. This research has provided evidence that suggests that web site satisfaction is linked to high familiarity with the medium. Hence the ability to derive information that is useful from the Internet may depend on the ability of the user in operating search engines and other search tools. Thus the Phase 2 has shown that search interface design is particularly challenging in this public access environment because customers will come to the web site with a wide range of e-shopping experience. These insights provide support for a Phase 3 study that aims to utilise a more diverse sample.

4.11 Consideration of Attributes

The aim of the preliminary research was to identify web site attributes that respondents expected should be present if they were to use a bank web site for information search. Phase 3 study will compare participant normative and predictive expectations across two task scenarios involving the completion of three identical question batteries by respondents. The preliminary research generated 30 items relating to information provision.

Consideration of these items raised three concerns with regards to the Phase 3 enquiry. First there was a concern that the repetition of such a large number of items was likely to lead to response fatigue that would negatively affect the validity of the response given. Second certain attributes applied only to participants whose bank had an offline presence or only to students, for example, "Details of how many branches there are", "Details of special student packages".

Oliver (1996) notes that factor analysis is the preferred method of reducing dimensionality, thereby increasing the level of abstraction, of attribute lists. However Chisnall, 1991:160) cautions that a limitation of this approach is that “the number of items in a scale is arbitrary and sometimes small”. Douglas (1995) suggests that a questionnaire redesigned using factor analysis should have a totally new set of questions that better capture the underlying dimensions that have been identified. Whilst the exploratory factor analysis resulted in deletion of three items, it was decided to further reduce the number of items to be carried over into Phase 3.

The first stage of the screening was to remove those items that were only appropriate for consumers whose bank had an offline presence. This resulted in the removal of four items: “Details of special student packages”, “Details of how many branches there are”, “Details of branch locations” and “Available in branches via a special terminal”. The second stage of the screening was a comparison of the items with those found in both the Internet marketing and IS literatures utilising the concepts of systems quality and information quality. Systems quality is considered an important component of web site quality. For example, McKinney et al. (2002) note that the lack of physical contact inherent in the online shopping experience causes customers to “rely heavily on technology and system quality” (p. 297). Separate measures of web site information quality and web site system quality are consistent with information systems quality models by DeLone and McLean (1992) and Spreng et al. (1996).

In addition, considering what is delivered or technical quality (information content) and how it is delivered or functional quality (the web site system) is also consistent with Gronroos’s (1984) model of service quality. Lassar et al. (2000) found that technical/functional quality outperformed the SERVQUAL dimensions in predicting customer satisfaction with retail banking. They reasoned that this approach is more suitable where customers are actively involved or highly interested in service delivery, and such would be the case in online banking. Therefore, it is felt that screening for items that reflect both system quality and information quality is appropriate for this study.

An examination of empirical research that identified dimensions of systems quality in a consumer and retail banking setting was the first stage of survey design. McKinney et al. (2002) found three dimensions of systems quality: access, usability, and navigation. However, this research was conducted amongst students in a laboratory setting and has not been tested comprehensively. Jun and Cai (2001) in a critical incident analysis of retailing banking bulletin board postings by Internet bank customers, identified six dimensions of system quality: accuracy, ease of use, timeliness, aesthetics, security and contents.

However, there are three dimensions that are not task-neutral: accuracy of transactions, timeliness of information, and information content. This leaves ease of use, aesthetics and security as usable systems quality dimensions in this study. Therefore, Phase 3 measures the following five dimensions of Internet banking systems quality: access, usability, navigation, aesthetics and security. These items were operationalised through reference to the preliminary findings and the online banking literature (Table 4.16).

Next dimensions of information quality were constructed with reference to the preliminary findings and online banking research (Table 4.17). Care was taken to select items that could apply both to an Internet-only bank. For example an Internet-only bank would not be able to offer terminals in branches and the item relating to “company information” was substituted for the item relating to “details of branch numbers”.

Table 4.16 System Quality Items

Dimension	Prior Research	Item
Aesthetics	Jun and Cai (2001), Joseph and Stone (2003), Kim (2005), Jayawardhena (2004), Siu et al (2004)	Have moving graphics
Navigation	Jayawardhena (2004)	Have a search engine for in site search
Privacy	Kim (2005)	Require a username/password
Access	Joseph et al (1999), Jun and Cai (2001), Joseph and Stone (2003), Akinci et al (2004). Jayawardhena (2004), Ibrahim et al (2006),	Be quick to download where I usually access the Internet
Security	Jun and Cai (2001), Siu and Mou (2002), Joseph and Stone (2003), Yang et al (2004),	Offer a secure connection
Communication	Preliminary Studies	Allow me to send an e-mail to my bank
Responsiveness	Bauer et al (2005), Kim (2005)	Confirm to me by e-mail that a function has been performed correctly.

Table 4.17 Information Quality Items

Dimension	Prior Research	Item
Trialability	Tan and Teo (2000), Kolodinsky et al (2000), Black et al (2001), Nor and Pearson (2007)	Have the facility to experiment with online banking
Provider information	Preliminary studies	Have company information about my bank
Decision support	Preliminary studies	Help me learn about financial services
Post-purchase information	Preliminary studies	Have information about how to make a complaint
Price Comparison	Kim (2005)	Had details about competitors' rates
Price Information	Bauer et al (2005)	Have details about own rates
Process Information	Preliminary studies	Have details about how my account should work.

4.12 Chapter Conclusion

This chapter has presented the findings of two phases of preliminary research. Phase 1 was used to generate a range of normative expectations for a bank web site in the context of information search. Findings indicated that participant expectations of web site, provider and service characteristics were broadly consistent with previous studies however the range of attributes found within information provision was greater. There were clear expectations that a web site should be quick to download and have tools to assist with ease of navigation and search efficiency (search engine, site map, online tutor). Web site attributes such as: “flashy graphics” and “pop-up ads” were disliked and felt to be inappropriate for a bank web site. The Phase 1 findings also indicated that there might be differences in expectations according to the level of Internet experience and product knowledge that consumers enjoyed.

The Phase 2 quantitative study provided evidence of the generalisability of the Phase 1 findings within a student sample. Expectations of bank web sites were ranked by the mean score. The highest ranked variables indicated that participants expected speed, efficiency and targeted information. Those items that students tended to agree should not be present were interactive features such as: “flashy graphics” and “pop-up” ads. Thus, these findings supported the Phase 1 evidence.

Exploratory factor analysis of the expectations of bank web sites as a source of information identified seven factors, these were: “Transaction Technicalities”, “Decision Making Convenience”, “Interactive Interrogation”, “Speciality Information”, “Search Efficiency”, “Physical Back-up” and “Technology thrill”. Phase 2 quantitatively explored differences in expectation according to a selection of individual variables and indicated that expectations vary according to prior Internet experience and activity. Higher expectations were found amongst those who most frequently used and those who had greatest experience of the medium.

It is the aim of the Phase 3 study to explore these differences further. Thus the preliminary studies assisted in the generation of consumer based evaluative criteria for a bank web site as an information source. It is proposed in Phase 3 to explore the

differences in expectation across task scenario with a more diverse sample of Internet users.

CHAPTER 5 MAIN RESEARCH

5.1 Chapter Introduction

This chapter reports on the Phase 3 research findings. The objective of Phase 3 was to identify any differences in response between information search and account access task scenarios. Chapter 4 reported on the preliminary research undertaken in Phases 1 and 2. Chapter 4 identified key system attributes that consumers use to evaluate a bank's web site for information search. In Phase 1 a range of normative expectations were generated through qualitative research for a bank web site in the context of information search. Analysis indicated differences in expectations according to the level of Internet experience and product knowledge that consumers enjoyed.

The Phase 2 quantitative study provided evidence of the generalisability of the Phase 1 findings to a student sample. Analysis of expectations indicated that there are strong expectations that certain web site attributes should be present for information search whilst others were not rated as highly. In addition this preliminary study indicated that expectations vary according to prior Internet and online banking activity. It is the aim of the Phase 3 study to explore these differences further and to extend the scope of the enquiry by examining how findings vary according to task condition. This introduction reports on data collection, preparation and assessment and presents a descriptive report of the achieved sample before concluding with an overview of the sections that comprise the main chapter.

5.1.1 Data Collection

The population of interest is Internet users who maintain a bank account. Data was collected from a stratified sample of 10,000 Internet users who subscribed to a permission-based list. A total of 10,000 e-mail invitations were issued on Wednesday October 2005 and 542 questionnaires were received giving a response rate of 5.4%. A full discussion of instrument design, piloting and data collection procedure is contained in Chapter 3. Table 5.1 provides an overview of the nature of the

information gathered and the variables utilised, a full discussion of question design and order can be found in Section 3.12.

Table 5.1 Overview of Data Collected

Information	Variables
Socio-demographic	<ul style="list-style-type: none"> - Gender - Age - Income - Educational Attainment
Banking Behaviour	<ul style="list-style-type: none"> - Most frequently used banking method - Current account involvement - Current account understanding - Current account ability
Online Banking Behaviour	<ul style="list-style-type: none"> - Visitor of bank web site - Year of first bank web site visit - Frequency of information search - Frequency of account access - Intention to use - Likelihood of use for information search - Likelihood of use for account access - Risk associated with bank web site use for information search - Risk associated with bank web site use for account access
Online Behaviour	<ul style="list-style-type: none"> - Frequency of Internet use - Year of first use of Internet - Frequency of information search - Frequency of purchase - Internet involvement - Internet ability - Internet understanding
Situational	<ul style="list-style-type: none"> - Broadband at home
Expectation	<ul style="list-style-type: none"> - Predictive expectation of bank web site attributes - Normative expectation of bank web site attributes for information search - Normative expectation of bank web site features for account access

5.1.2 Data Preparation and Assessment

Responses were imported directly into SPSS V.14, this procedure reduces coding error (Norman et al 2001). Visual inspection of the data detected no duplicate entries.

Frequency reports indicate that all values are within range and that both means and standard deviations are plausible. The dataset was examined for non-response bias using a “time trends” approach (Armstrong and Overton 1977). A dummy variable was computed where 1= “Day one response” and 2= “Day two or later response”. A frequency analysis showed that 62% (n=302) responded on day one and 38% (n=184) responded on day two or later. The relationship between the dummy variable and other variables was tested and no statistically significant substantive relationships ($p < .05$) were found.

Missing values were assigned a code that was not used to represent real data (Bryman and Cramer 2001). The degree of missing data was established for each case and variable and then any pattern of missing data was identified before selection of the appropriate missing data procedure. Listwise deletion was employed to remove those participants who did not have a bank account or whose bank did not offer online banking. Fifty cases were thus excluded from subsequent analysis. Nineteen cases were deleted due to having over 25% of values missing from the response. Within the achieved sample 21% of cases (n= 116) had more than 5% of data missing and for these cases it was decided to use pairwise deletion in the subsequent analysis. In total sixty-nine cases were deleted from the sample. Thus a sample of 473 participants was achieved. Appendix VII details the procedures used to identify and deal with missing data.

5.1.3 Descriptive Analysis

Descriptive analysis was used to examine the composition of the sample (Appendix X). Both gender groups were represented evenly with 48% male (n = 227) and 52% female (n = 242). The majority of the respondents were aged 25-34 years (26%, n = 121) and approximately three-quarters of respondents (73%, n = 343) were divided evenly across the 25-54 age bands. Half of the respondents (50%, n = 183) had a household income of £29,999 or less. The indications are that the composition of the sample in terms of socio-demographic characteristics is broadly consistent with that of the population of UK Internet users (Office of National Statistics 2001a). However it is acknowledged that the sample is drawn from a permission based list and hence not strictly representative.

Participants were regular and active Internet users. The majority of those surveyed use the Internet daily (89%, n = 427). The modal year of initial use was 1998, indicating that participants had around 7 years experience of the medium. Nearly all participants had broadband access at home (86%, n = 406). Most participants searched for information on the Internet several times a week (41%, n = 195) and purchased goods or services online 1-3 times a month (38%, n = 179). This is consistent with national data that finds that information search is the most common activity amongst UK Internet users (Shepherd and Bryson 2007).

In terms of product knowledge 62% (n = 293) of respondents rated their current account understanding as “Good” and 62% (n = 285) rated their ability to manage their current account as “Good”. In terms of channel knowledge 64% (n = 304) of participants rated their understanding of the Internet as “Good” and 66% (n = 311) rated their ability to use the Internet as “Good”. These are self-reported, subjective measures and not objective measurements of knowledge or ability, however these findings provide an indication that respondents consider themselves as capable and knowledgeable product and channel users.

In terms of online banking activity, around three-quarters of respondents regularly banked online (74%, n = 347). Nearly all had visited their bank web site at some point (91%, n = 430) and the majority of respondents intended to visit their bank’s web site at some point in future (88.3%, n = 416). The modal year for the initial visit was 2000, indicating participants had around 4 years experience.

Predominantly a bank web site was visited for the purpose of account access. For example, over three-quarters of respondents (76.1%, n = 324) reported that they had visited their bank’s web site more than 12 times in the previous year for account access. In comparison just 15.8% (n = 66) of participants had visited their bank’s web site for the purpose of information search more than 12 times in the previous year. The modal frequency for information search was 1-3 times in the last year (35.4%, n = 151).

In terms of future use almost all participants who had an intention to visit their bank web site at some point in future and stated that it was “Extremely Likely” that they

would do so for the purposes of account access (85%, n= 348). In comparison intentions to visit for future information search were less certain with just over half thinking this was “Likely” (51%, n= 207) and just over a quarter thinking this was “Extremely Likely” (28%, n= 115).

The relatively low frequency of information search behaviour and intention could be related to the fact that in general participants perceive that they have good levels of product knowledge and thus do not have a need for information. Alternatively, this finding may indicate that participants did not perceive that their bank web site would meet their information search expectations and this question will be explored further in the subsequent analysis.

The widespread use of online banking amongst the sample is problematical. The literature review in Chapter 2 identified that research was needed to explore both user and non-user bank web site evaluation. The aim of the Phase 3 was to address this need and to increase understanding of the influences on online banking adoption/non-adoption amongst Internet users. However, within the achieved sample only 9% (n = 43) had not visited their bank web site and of these only 30 had no intention to visit a bank web site at some point in future. Thus less than 10% of the sample could be classed as non-users of online banking and thus the achieved sample was not sufficient in terms of meeting case-to-variable ratios for the proposed analysis.

Consultation of the IS literature indicated that several authors argue that adoption should be conceptualised as intention to continue use rather than initial visit for the purpose of trial (Cooper and Zmund 1990, Bhattacharjee 2001). In addition this conceptualisation is consistent with the Diffusion of Innovation (DoI) perspective which proposes a “confirmation” stage when those who have made a trial of an adoption re-evaluate their initial decision (Rogers 1995). Thus it was decided to explore whether expectation fit was related to future intention to use a bank web site for a specific task amongst Internet users.

Prior to the Phase 3 analysis four sets of variables were transformed. Scores were calculated for information search risk, account access risk, Internet involvement and current account involvement items. Appendix VIII details the procedures used and

the results of this analysis. The intention variable was transformed into a dichotomous variable due to the skewed distribution of response. Those who stated that they were likely or highly likely to undertake this task were grouped together and labelled “Likely”. Those who had indicated that they had no intention, or were unlikely or highly unlikely to undertake the task were grouped together and labelled as “Unlikely”. Those who indicated that they were undecided were removed from the analysis. Frequency analysis showed that 85.2% (n =387) of participants were likely use their bank’s web site to access their account online in the next 12 months whilst 14.8% (n = 67) were unlikely. In comparison 79.7% (n =322) were likely to use their bank’s web site to search for information in the next 12 months whilst 17.3% (n =82) were unlikely.

5.1.4 Chapter Structure

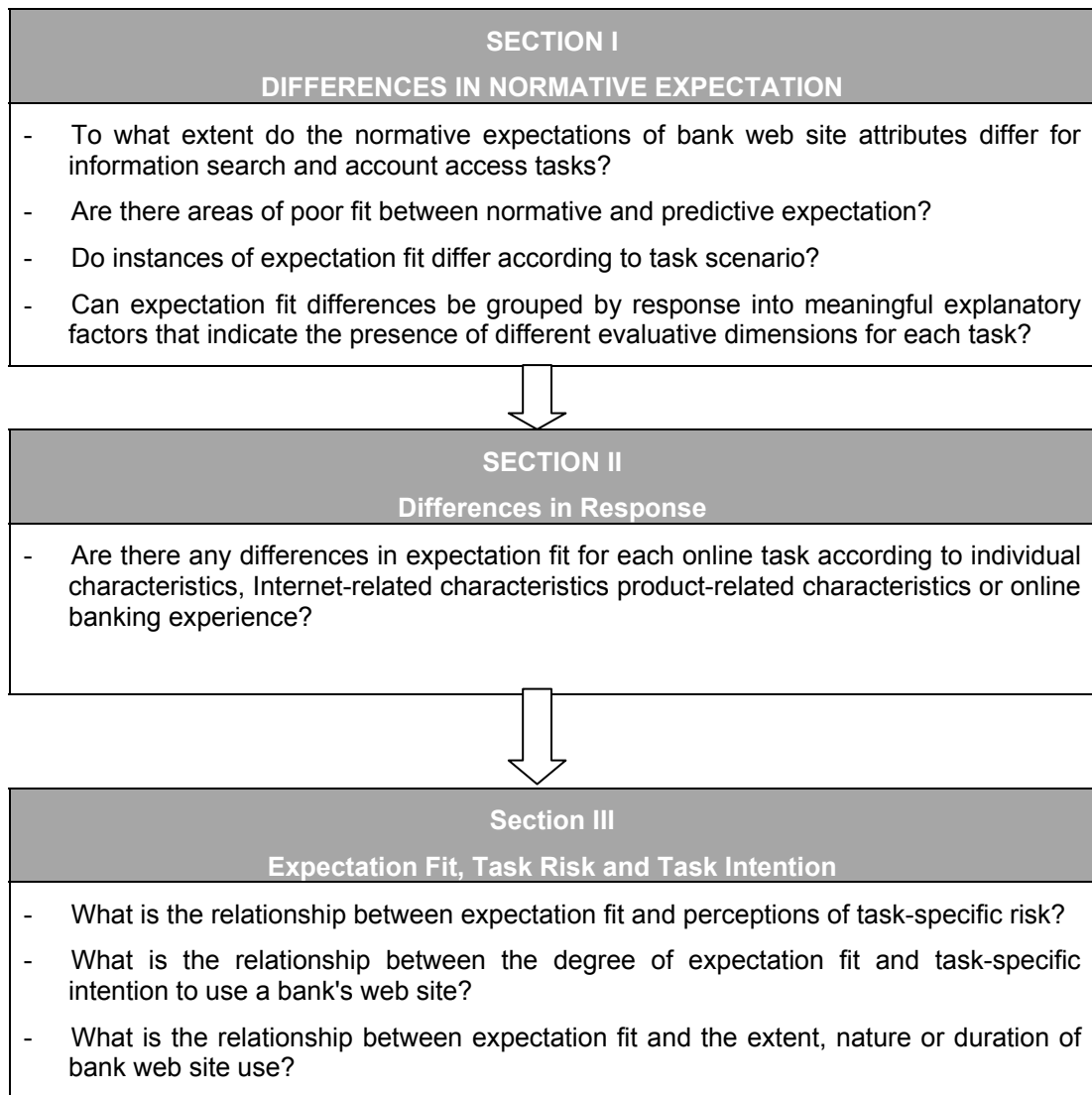
This chapter is divided into three sections each of which addresses the research questions formulated in Chapter 2 (Figure 5.1). In answering the questions in Figure 5.1, this chapter contributes towards the development of this thesis by addressing the research needs that were identified in Chapter 2. Specifically these are as follows:

- The need to adopt a finer-grained approach to e-service adoption and in particular to examine how consumer expectations of a bank’s web site vary according to task context.
- The need to increase understanding of how the fit between normative and predictive expectations of web site attributes relates to perceptions of risk and whether these relationships change according to task context.

This chapters continues with Section I. This section explores how normative expectations differ according to task scenario and identifies differences between predictive and normative expectations (expectation fit). Section II then explores how expectation fit differs according to individual characteristics, Internet-related characteristics, product-related characteristics and online banking experience. Section III explores through bivariate and multivariate analysis how expectation fit is

related to task-specific risk and task-specific intention to use a bank webs site. The chapter concludes by summarising the key findings.

Figure 5.1 Chapter Section and Research Questions



Section I: Expectations of Web Site Attributes

5.2 Section Introduction

This section addresses the following research questions:

- To what extent do the normative expectations of bank web site attributes differ for information search and account access tasks?
- Are there areas of poor expectation fit between normative and predictive expectation?
- Do instances of expectation fit differ according to task scenario?
- Can differences in expectation fit be grouped by response into meaningful explanatory factors that indicate the presence of different evaluative dimensions for each task?

This section reports on the analysis of respondent normative and predictive expectations. Respondents were asked to indicate their predictive and normative expectations of bank web sites using a battery of 14 web site attributes. This battery was used three times: once to capture predictive expectations of attributes believed to be present on a bank web site and twice to capture normative expectations of what should be on a bank web site to give excellent service when information seeking or accessing an account. Respondents indicated on a 5 point Likert Scale ranging from “strongly agree” which was given a rating of 5, to “strongly disagree” which was given a rating of 1. The label “neither” was attached to the mid-point 3.

This section begins by exploring differences according to task in normative expectation through a ranking of mean scores and a t-test for related means. Next the calculation and comparison of “fit” between predictive and normative expectation for each task condition is detailed. Then the section reports on the findings of exploratory factor analyses that explore the dimensionality of expectation “fit” according to task scenario. The section concludes with a summary of the research findings.

5.3 Differences in Normative Expectation According to Task

The first stage of the analysis explores the normative expectations of bank web site attributes and seeks to identify any differences between information search and account access tasks. Thus this section addresses the research question:

- To what extent do the normative expectations of bank web site attributes differ for information search and account access tasks?

Descriptive analysis is used to rank variables according to mean score (Tables 5.2 and 5.3). The category “Strongly Agree” has the highest numerical value (5). Ranking normative expectations by mean score indicates the attribute that respondents most strongly expect should be present on a bank web site for each task scenario. Findings were examined to determine if any attributes were consistently valued below 3 (indicating that respondents disagreed that this attribute should be present) and the most highly ranked items were identified. Finally those mean scores with a standard deviation of greater than one are discussed.

For both information search and account access scenarios only one item (“Have moving graphics”) was consistently ranked below 3, indicating that respondents did not think that this feature should be present. This finding is consistent with those in Phase 1 and Phase 2 that found that entertainment features are not seen to add any value to a bank web site. For example, some participants in Phase 1 considered these features a waste of time and intrusive. However it is interesting to note that in both scenarios the standard deviation for this item is greater than 1. Closer examination found that for information search 38.9% disagree that this feature should be present and 21.7% agree that it should be present. For account access most respondents (41.6%) disagree that this feature should be present but a small number (14.4%) agree that it should be present.

Several authors argue that the use of graphics, multimedia and other interactive elements make a web site interesting and easy to use (Liu and Arnett 2000, Barnes and Vidgen 2002, Loiacono et al 2002). However there is mixed evidence within the research literature of the extent to which consumers want these features to be present

on a bank web site. For example, Karp and Karp (1997) stress that annoying and distracting design elements might deter users whilst Huizingh (2000) argues for the inclusion of multimedia elements to excite, entertain and encourage impulse purchase. This researcher was unable to locate any study that compared the desirability of this feature across task scenario. Thus the results of this analysis indicate that, in the context of online banking, moving graphics are not valued by Internet users and support previous findings in the online banking literature (Joseph and Stone 2003).

Table 5.2 Means: Normative Expectations for Information Search

	n	Mean	SE	SD	Min	Max
Be quick to download where I usually access the Internet	469	4.60	0.03	0.69	2	5
Have details about my bank's own rates	468	4.53	0.03	0.68	2	5
Have a search engine for in-site search	469	4.48	0.04	0.78	1	5
Have details about how my account should work	468	4.41	0.03	0.74	1	5
Allow me to send an e-mail to my bank	469	4.32	0.04	0.83	1	5
Help me learn about financial services	468	4.31	0.04	0.79	1	5
Have company information about my bank	469	4.30	0.04	0.81	1	5
Have information about how to make a complaint	468	4.27	0.04	0.82	1	5
Offer a secure connection	468	4.18	0.05	1.02	1	5
Have details about competitors' rates	468	3.95	0.05	1.03	1	5
Confirm to me by e-mail that a function has been performed correctly	467	3.93	0.05	1.04	1	5
Have the facility to experiment with online banking	468	3.93	0.04	0.93	1	5
Require a username	469	3.56	0.06	1.38	1	5
Have moving graphics	466	2.71	0.05	1.12	1	5

For the information search task scenario the top three ranked means are those for: “Be quick to download”, “Have details about my bank's own rates” and “Have a search engine for in-site search” (Table 5.2). Research has aligned these three items with information search satisfaction. For example Lynch and Ariely (2000) find that the ability to search and quickly gain access to pricing information increases web site satisfaction in an experimental study amongst 72 postgraduate students and staff at a US university in the context of online wine purchase. Thus the results here support the US research and increase understanding of the generalisability of this research,

since the findings relate to a different industry sector and are drawn from a wider sample.

In terms of variation in response several items had a standard deviation greater than 1 including: “require a user name”, “provide a confirmation e-mail”, “competitors’ rates”, “secure connection” and “moving graphics”. Moving graphics has been discussed earlier. The remaining items are not ranked highly and are commonly related to attributes that provide security and reduce risk for online transaction (Ainscough and Luckett 1996, Forsythe and Shi 2003, Joines et al 2003, Soopramanien and Robertson 2007). These results indicate that some participants would like to see these attributes present when searching for information. Thus, there is insight that bank web site visitors might value these features as a “safety cue” (Van Noort et al 2008) and expect that a bank web site should be secure regardless of online task.

Table 5.3 Means: Normative Expectations for Account Access

	n	Mean	SE	SD	Min	Max
Offer a secure connection	470	4.83	0.02	0.51	2	5
Require a username	471	4.80	0.03	0.54	1	5
Be quick to download where I usually access the Internet	470	4.68	0.03	0.64	2	5
Allow me to send an e-mail to my bank	472	4.47	0.04	0.77	1	5
Have details about my bank’s own rates	471	4.46	0.03	0.73	1	5
Have details about how my account should work	469	4.42	0.04	0.75	1	5
Have information about how to make a complaint	470	4.38	0.03	0.73	1	5
Confirm to me by e-mail that a function has been performed correctly	470	4.17	0.04	0.96	1	5
Help me learn about financial services	471	4.04	0.04	0.88	1	5
Have company information about my bank	472	4.01	0.04	0.90	1	5
Have a search engine for in-site search	471	3.98	0.05	0.99	1	5
Have the facility to experiment with online banking	471	3.89	0.04	0.94	1	5
Have details about competitors’ rates	470	3.72	0.05	1.02	1	5
Have moving graphics	469	2.57	0.05	1.07	1	5

In terms of account access the three items most strongly desired to be present are: “Offer a secure connection”, “Require a Username” and “Be quick to download where I usually access the Internet” (Table 5.3). As discussed previously these are

attributes associated with reducing risk and guaranteeing security of online transacting and thus results are consistent with the task under consideration. There were fewer items compared to the information search scenario that had variation of response greater than one. These items were “Moving graphics” (which have been discussed) and “Competitors rates”. The inclusion of competitors’ rates is of interest with a small proportion of respondents (11%) disagreeing that these should be present. The Phase 1 study identified that whilst certain consumers value comparative pricing others remain sceptical that such information will be objective and accurate. Equally this finding may indicate that in the context of online banking consumers feel that there is little to be gained by comparative pricing since rates will not vary between financial services provider. For example in the context of offline banking consumers perceive that competition between banks is superficial (Lawson and Watt 1983).

In order to explore where normative expectations differed across task scenario t-tests for related means were conducted to identify any statistically significant differences in normative expectations between task scenarios (Table 5.4). Statistically significant differences are present in all but two instances “Details of how my account should work”, and “Have the facility to experiment with online banking”. These items can be considered to relate to trial and initial investigation into the process of online banking. It is of interest that participants expect that these should be present for both information search and account access. It could be that, in this instance, the participant is envisaging that the purpose of the information search task is to address gaps in knowledge regarding online banking. Indeed the Phase 1 study indicated that there was a lack of knowledge amongst focus group participants of the online banking process.

The next stage of the analysis, in an approach consistent with Wolf (1986), examined mean differences ± 0.25 as being of interest. Items with a mean difference greater than $+0.25$ are: “Require a username”, “Offer a secure connection”, and “Confirm by e-mail that a function has been performed correctly”. In these instances normative expectations are higher for the account access task. These features have been considered as risk reducing attributes in previous studies into online purchase (Yoon

2002, Yousafzai et al 2005). Items with a mean difference less than -0.25 are: “Help me learn about financial services”, “Have company information about my bank” and “Have a search engine for in-site search”. In these instances the expectations are higher for the information search task. These are predominantly items relating to ensuring a productive outcome from information search. Overall these findings provide support for the idea that normative expectations of what should be present vary according to task scenario.

Table 5.4 T-Test: Normative Expectation and Task Scenario

Expectation	Task	n	Mean	Mean Diff	SD	SE	t df	Sig .
Require a username	Access	467	4.80	1.24	1.49	0.07	17.98	.00
	Search	467	3.56				466	
Offer a secure connection	Access	465	4.83	0.65	1.04	0.05	13.47	.02
	Search	465	4.18				464	
Confirm by e-mail that a function has been performed correctly	Access	464	4.17	0.25	0.96	0.05	5.56	.00
	Search	464	3.93				463	
Allow me to send an e-mail to my bank	Access	468	4.46	0.14	0.79	0.04	3.91	.00
	Search	468	4.32				467	
Have information about how to make a complaint	Access	465	4.39	0.11	0.76	0.04	3.24	.00
	Search	465	4.27				464	
Be quick to download where I usually access the Internet	Access	466	4.68	0.08	0.55	0.03	3.18	.00
	Search	466	4.60				465	
Have details about how my account should work	Access	464	4.43	0.02	0.69	0.03	0.67	.50
	Search	464	4.41				463	
Have the facility to experiment with online banking	Access	466	3.89	-0.04	0.93	0.04	-0.85	.40
	Search	466	3.93				465	
Have details about my bank’s own rates	Access	466	4.46	-0.06	0.64	0.03	-2.16	.03
	Search	466	4.53				465	
Have moving graphics	Access	462	2.57	-0.14	0.66	0.03	-4.59	.00
	Search	462	2.71				461	
Have details about competitors’ rates	Access	465	3.72	-0.22	0.84	0.04	-5.77	.00
	Search	465	3.94				464	
Help me learn about financial services	Access	466	4.05	-0.26	0.80	0.04	-7.16	.00
	Search	466	4.31				465	
Have company information about my bank	Access	468	4.02	-0.28	0.83	0.04	-7.39	.00
	Search	468	4.30				467	
Have a search engine for in-site search	Access	467	3.99	-0.49	0.94	0.04	-11.34	.00
	Search	467	4.49				466	

5.3.1 Summary

The research question being addressed is:

- To what extent do normative expectations of bank web site attributes differ for information search and account access tasks?

These results indicate that there are differences present. This sub-section reported on the ranking of means for normative expectations according to task scenario and the results of a t-test for related means. Interpretation of the summary statistics found that the ranking of moving graphics supported the conclusions made in Phase 1 and Phase 2 of this study. These results indicate that amongst Internet users the presence of moving graphics is not valued and thus provides support for previous online banking research that arrives at this conclusion (Joseph and Stone 2003).

The top three ranked items for each task scenario indicate where there is strongest agreement that an item should be present. The results for information search and account access are interpreted as being consistent with the nature of the task being considered, furthermore these findings are consistent with other studies that have examined specific task contexts and thus these results indicate that that the research instrument has nomological validity.

An examination of the items with standard deviations greater than 1 identified those items where there was a polarity of response. There is evidence that there is a consumer segment that, when using a bank web site to search for information, expect that security measures should be present whilst another segment do not have these normative expectations. For the account access task there are consumers who would value comparative information whilst others disagree that this should be present. These findings indicate areas that are worthy of future examination.

T-tests for related means were conducted to explore where normative expectations differed across task scenario. The majority of items showed statistically significant differences in response according to task scenario. Normative expectations are consistent with the nature of the task being considered. This finding supports the thesis that investigation into task context is warranted. However there is no difference in normative expectations for two items: “the facility to experiment with online banking” and “details about how my account should work”.

5.4 Expectation Fit According to Task

The second stage of the analysis examines and explores the fit between normative and predictive expectation. Thus this section addresses the research question:

- Are there areas of poor expectation fit between normative and predictive expectation?
- Do instances of expectation fit differ according to task scenario?

The literature review (Chapter 2) discussed the Expectancy Disconfirmation (ED) research perspective approach. It was outlined how ED informed research examines the gap between perception and expectation and the relationship between this gap and service quality or satisfaction evaluation. Research with a focus on service quality tends to utilise normative expectation whilst satisfaction research utilises predictive expectation. A limitation of this approach is that it requires a participant to have prior experience of the phenomenon under consideration. Thus, as discussed in the methodology (Chapter 3) this thesis uses normative expectation as a referent state against which predictive expectation is compared and thus applies an approach suggested by Sirgy (1984) as way of examining consumer responses to a product that is untried.

However, in the achieved sample for this study there are limited numbers of participants who have not tried their bank web site. The descriptive findings reported in Section 5.1.3 show that in terms of sample composition the majority of participants have some prior experience with 91% having visited their bank's web site at some point. The extent of experienced users in this sample raises concern that there will be limited evidence of differences in expectation levels since there is evidence that both predictive and normative expectations change as a result of experience over time. For example, Gwynne (1998) in a longitudinal study into banking expectations amongst students found that normative expectations became less important as an explanatory variable as the participants became more knowledgeable and the accuracy of their predictive expectations increased.

Gwynne et al (2000), drawing on this dataset, report that those consumers who have had positive prior experience adjust their adequate expectations (which are measured as predictive expectation) upwards towards their normative expectation since positive experience teaches the consumer that higher predictive expectations are realistic to hold. Van Riel et al (2003) in the context of online travel services replicate this study amongst a student sample of Internet users. This study used a cross-sectional design and did not specify a task context. The findings show that there are no differences between expectation levels for those items measuring the dimension of web site security and thus for these items predictive and normative expectations fit.

However, there is a need for detailed research into different levels of expectation. In the wider literature there are few studies that systematically examine both types of expectation (Gwynne 1998, Devlin et al 2002). Van Riel et al (2003) argue that there is a need for studies into different categories of e-service in order to create a broader base for generalisation of consumer web site expectation. The review of the literature for this study did not locate any study that has examined the differences between predictive and normative expectation in the context of online banking. Thus it was felt that this analysis is able to contribute to this area of study and it was considered appropriate to proceed with an evaluation of expectation fit.

First the predictive expectation means were ranked (Table 5.5). Participants were asked to indicate to what extent they predicted that a certain item would be present if they were to visit their bank web site “today”. The category “Strongly Agree” had the highest numerical rating (5); thus if an item is consistently valued below 3 then respondents disagree that this item will be present. Table 5.5 shows that “Have details about competitors’ rates” is an item that participants disagree will be present. The top-three items that participants most strongly agree will be present are: “Require a username”, “Offer a secure connection” and “Be quick to download where I usually access the Internet”. A comparison with Table 5.4 shows that the normative expectations means for “Require a username” and “Offer a secure connection” are ranked highly indicating little difference between expectation levels. These are items are those that measure security dimensions and thus one

interpretation is that this finding is consistent with Van Riel et al (2003) and in order to identify other areas of similarity expectation fit was calculated.

Table 5.5 Means: Predictive Expectations of a Bank Web Site

	n	Mean	SE	SD	Min	Max
Require a username	471	4.70	0.03	0.71	1	5
Offer a secure connection	470	4.59	0.03	0.74	1	5
Be quick to download where I usually access the Internet	472	4.36	0.04	0.85	1	5
Have details about my bank's own rates	469	4.31	0.05	0.78	1	5
Allow me to send an e-mail to my bank	470	4.26	0.04	0.91	1	5
Have company information about my bank	469	4.12	0.04	0.86	1	5
Have details about how my account should work	472	4.11	0.04	0.83	1	5
Help me learn about financial services	471	4.05	0.04	0.87	1	5
Have information about how to make a complaint	469	4.04	0.04	0.90	1	5
Have a search engine for in-site search	471	3.93	0.05	0.98	1	5
Have the facility to experiment with online banking	470	3.68	0.05	1.02	1	5
Confirm to me by e-mail that a function has been performed correctly	471	3.64	0.06	1.19	1	5
Have moving graphics	468	3.26	0.06	1.18	1	5
Have details about competitors' rates	470	2.91	0.05	1.14	1	5

In order to calculate expectation fit the normative expectations score was subtracted from the predictive expectation the score for each web site attribute, the rationale for this approach is discussed in Chapter 3. A positive score indicates where the predictive expectation that an attribute will be present exceeds the normative expectations that an attribute should be present. In other words an instance of anticipated over-provision. Conversely a negative score indicates anticipated under-provision; namely the predictive expectation that an attribute will be present falls short of the normative expectation that an attribute should be present. This resulted in two sets of fourteen difference scores one set for each task scenario. In order to prevent confusion with the initial expectation statements the item labelling has been summarised.

For information search (Table 5.6) there are three positive expectation fit scores: "Username", "Moving graphics" and "Secure connection" that indicate over-provision. Two of these items: "Username" and "Secure connection" are features that enhance web site security. This finding shows that in the context of information

search there is a substantive gap between predictive and normative expectation levels for these items. These results differ from the findings of Van Riel et al (2003) that expectation levels did not differ amongst experienced Internet users. The Van Riel et al (2003) study did not consider information search as a distinct task and thus task context might be one explanation of the results presented here. The finding that the predicted provision of moving graphics exceeds normative expectation is consistent with previous findings of this study that indicate that this web site attribute is not valued in the context of online banking.

For all other items the fit scores are negative indicating that these are predicted to be under provided. There are six items where fit scores are less than -0.25 and thus are considered of interest: “Experimentation”, “Learn about financial services”, “Confirmation e-mail”, “Account instructions”, “Search engine” and “Competitors’ rates”. These items are relevant to financial service information needs and the search task and learning about online banking. It will be of interest to see if these gaps enable items to be grouped meaningful by response through subsequent exploratory factor analysis.

Table 5.6 Means: Expectation Fit for Information Search

Difference Score	n	Mean	SE	SD	Min	Max
Username	467	1.14	0.04	1.47	-3	4
Moving graphics	463	0.56	0.04	1.23	-3	4
Secure connection	465	0.41	0.05	1.17	-3	4
E-mail to bank	466	-0.07	0.06	1.02	-4	4
Company information	465	-0.18	0.04	0.86	-4	2
Bank’s own rates	464	-0.22	0.04	0.78	-4	2
Complaint information	464	-0.23	0.05	1.02	-4	4
Quick download	468	-0.24	0.05	0.85	-4	2
Experimentation	465	-0.25	0.04	1.20	-4	4
Learn about financial services	466	-0.27	0.04	0.89	-4	3
Confirmation e-mail	465	-0.28	0.06	1.30	-4	4
Account instructions	467	-0.30	0.04	0.83	-3	2
Search engine	467	-0.55	0.07	0.96	-4	2
Competitors’ rates	465	-1.05	0.06	1.33	-4	2

The two items that exhibit the greatest under-provision are “Competitors’ rates” and “Search engine”. These are attributes that facilitate search and quick access to

pricing information and which have been shown to positively influence web site satisfaction (Lynch and Ariely 2000). These findings do not show that a gap between desired levels of provision and actual online provision exists. However this is an indication that participants anticipate under-provision and this perception might limit any intention to use their bank's web site for information search. Thus it will be of interest to explore in the subsequent analysis the extent to which anticipated under-provision is related to task intention.

For account access (Table 5.7) there are three positive expectation fit scores: "Moving graphics", "Company information" and "Learn about financial services" that indicate over provision. Two of these items: "Company information" and "Learn about financial services" are features that align with the information seeking task scenario. These findings show differences of less than 0.25 that are not considered substantive and thus for these items participants anticipate that provision will match their normative expectation. "Moving graphics" is the one item for which over-provision is substantial, this is consistent with previous results that indicate that for both task conditions consumers tend to disagree that this attribute should be present whilst predicting that it will be present.

Table 5.7 Means: Expectation Fit for Account Access

Difference Score	n	Mean	SE	SD	Min	Max
Moving graphics	464	0.70	0.05	1.14	-3	4
Company information	468	0.11	0.04	0.93	-4	4
Learn about financial services	469	0.01	0.04	0.92	-4	4
Search engine	469	-0.05	0.05	0.98	-4	4
Username	469	-0.10	0.03	0.65	-4	2
Bank's own rates	467	-0.15	0.04	0.83	-4	4
Experimentation	468	-0.21	0.05	1.07	-3	4
E-mail to bank	469	-0.22	0.04	0.89	-4	2
Secure connection	467	-0.25	0.03	0.66	-4	2
Quick download	469	-0.32	0.04	0.77	-4	2
Account instructions	468	-0.32	0.04	0.85	-3	4
Complaint information	466	-0.34	0.05	0.98	-4	3
Confirmation e-mail	468	-0.53	0.05	1.11	-4	4
Competitors' rates	467	-0.82	0.06	1.27	-4	4

For all other items the fit scores are negative indicating that these are predicted to be under-provided. There are six items where fit scores are less than -0.25 and thus are considered of interest: “Secure connection”, “Quick download”, “Account instructions”, “Complaint information”, “Confirmation e-mail” and “Competitors’ rates”. Several of these items are considered as also under-provided in the information search task context. For example for both task contexts “Competitor’s rates” are ranked as the item that is anticipated as having the greatest under-provision. Thus before preceding with the next stage of the analysis it was considered of interest to explore the extent to which the expectation fit scores differed according to task scenario using t-tests of related means (Table 5.8). The results show that there are differences between the mean expectation fit scores for the majority of items. However, there is no difference in the degree of expectation fit for “Experimentation” and “Account Instructions”.

Table 5.8 T-test for related Means: Expectation Fit for each task

Expectation Fit	Task	Mean	n	Mean Diff	SD	SE	t	Sig. df
Search Engine	Access	-0.06	465	0.49	0.94	0.04	11.34	0.00
	Search	-0.56	465				464	
Company Information	Access	0.10	464	0.29	0.83	0.04	7.46	0.00
	Search	-0.19	464				463	
Learn about Financial Services	Access	0.00	464	0.27	0.80	0.04	7.16	0.00
	Search	-0.27	464				463	
Competitors' Rates	Access	-0.83	462	0.23	0.84	0.04	5.77	0.00
	Search	-1.06	462				461	
Moving Graphics	Access	0.70	459	0.14	0.66	0.03	4.53	0.00
	Search	0.56	459				458	
Bank's own rates	Access	-0.16	462	0.07	0.64	0.03	2.24	0.03
	Search	-0.22	462				461	
Experimentation	Access	-0.22	463	0.04	0.93	0.04	0.90	0.37
	Search	-0.26	463				462	
Account Instructions	Access	-0.32	463	-0.02	0.69	0.03	-0.67	0.50
	Search	-0.30	463				462	
Quick Download	Access	-0.32	465	-0.08	0.55	0.03	-3.10	0.00
	Search	-0.24	465				464	
Complaint Information	Access	-0.35	461	-0.12	0.75	0.04	-3.34	0.00
	Search	-0.24	461				460	
E-mail to Bank	Access	-0.22	465	-0.15	0.79	0.04	-4.00	0.00
	Search	-0.07	465				464	
Confirmation E-mail	Access	-0.53	462	-0.25	0.96	0.04	-5.62	0.00
	Search	-0.28	462				461	
Secure Connection	Access	-0.25	462	-0.65	1.04	0.05	-13.48	0.00
	Search	0.40	462				461	
Username	Access	-0.10	465	-1.25	1.49	0.07	-18.07	0.00
	Search	1.14	465				464	

5.4.1 Summary

The research questions being addressed are:

- Are there areas of poor expectation fit between normative and predictive expectation?
- Do instances of expectation fit differ according to task scenario?

The results of this analysis indicate that there are areas of poor expectation fit and that the degree of expectation fit differs according to task scenario. This sub-section reported on the ranking of means for predictive expectation, the ranking of expectation fit means according to task scenario and the results of a t-test for related means. There was initial concern that due to sample composition there would be limited evidence of differences in expectation levels however interpretation of the summary statistics indicated that differences do exist.

In terms of information search the findings show that there is anticipated over-provision of security features. These results differ from the findings of Van Riel et al (2003) that expectation levels did not differ amongst experienced Internet users and provide evidence of a task effect being present. Key attributes that facilitate the ability to search and quickly gain access to pricing information are anticipated as being under-provided and this may result in limited task specific intention.

In terms of account access “Moving graphics” is the one item where over-provision can be considered to be substantive. This is consistent with previous findings of this and other studies (i.e. Joseph and Stone 2003). There are eleven items where under-provision is anticipated and there are areas of commonality with the expectation fit found within the information search task context, thus t-tests of related means were undertaken to see if the degree of expectation fit was the same across task scenario. This analysis indicates that, in general, there are differences between the mean expectation fit scores and presents further evidence of differences between task.

5.5 Dimensionality of Expectation Fit

This stage of the analysis examines and explores the dimensionality of the expectation fit scores. Thus this section addresses the research question:

- Can differences in expectation fit be grouped by response into meaningful explanatory factors that indicate the presence of different evaluative dimensions for each task?

This sub-section reports on exploratory factor analyses that were undertaken to identify whether expectation fit scores could be grouped into meaningful dimensions. Each task condition is treated separately and for each scenario there is a summary of the analysis undertaken and a report of the dimensions identified, the sub-section concludes with a summary that examines any similarities and differences between the factor solutions.

5.5.1 Information Search: Exploratory Factor Analysis

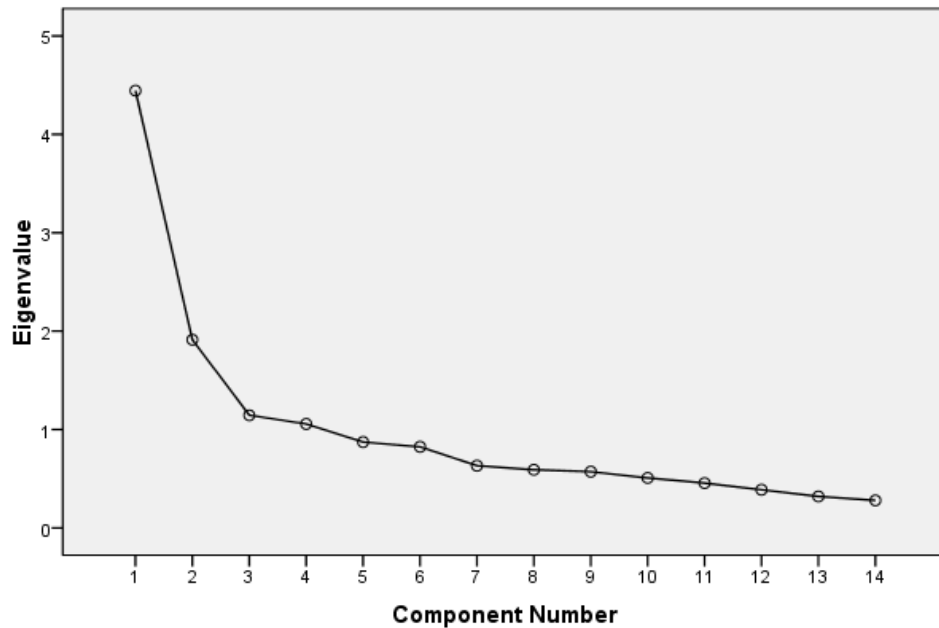
Before commencing the analysis the data was assessed against the requirements for this technique as discussed in Appendix VI. Accordingly, visual inspection of correlation and covariance matrices taken with appropriate statistical tests indicated that data requirements for factor analysis were met. Bartlett's test statistics were chi-square = 3171.40, df= 91, p= .00, the KMO test-statistic was 0.86 and the number of cases to variables was 457: 14 which is a ratio of 33: 1. Exploratory factor analysis was undertaken using PCA with a varimax rotation. Extraction was conducted using the Kaiser criteria that eigenvalues greater than 1 should be retained. The initial solution contained 4 factors that accounted for 61.1% of the variance in the responses (Table 5.9).

Table 5.9 Factor Loadings: Information Search

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	4.44	31.7	31.7
2	1.91	13.7	45.4
3	1.15	8.2	53.6
4	1.06	7.5	61.1
5	0.87	6.2	67.4

Examination of the rotated solution indicated that two items had equivalent scores across more than one factor: “Search Engine” and “Quick Download”. Difficulty in interpretation indicated that this can be termed a “muddy” and unclear structure (Tabachnick and Fidell 2007). Examination of the “break point” in the scree plot indicated that a three-factor solution might be more appropriate (Figure 5.2).

Figure 5.2 Scree Plot: Information Search Difference Scores



Thus the factor analysis was re-run specifying a three-factor solution (Table 5.10). This resulted in a clearer solution. However Factor 3 consisted of only a single item: “Moving Graphics”. Single item measures are problematical (Bryman and Cramer 2004). For example a single indicator may fail to capture the full breadth of a concept and may be subject to measurement error, whilst multiple indicators reduce the measurement error that might occur with a single response (Hair et al 1998, Bryman and Cramer 2004). However, despite this limitation the decision was taken to retain “Moving Graphics” in this solution for several reasons. First, the analysis of normative expectation means indicated that for information search there were response differences that warrant more detailed exploration. Second that when this

item was deleted the factor structure became unclear, the proportion of variance explained reduced to 50% and there was an increase in substantive cross-loading of items between factors. Table 5.10 provides the loading and the labels for the difference scores for information search. All item loadings are greater than 0.50 thus each variable makes a practical contribution to the factor solution (Hair et al 1998).

Table 5.10 Exploratory Factors: Information Search Expectation Fit

	<i>Rotated Score</i>		
	Factor 1	Factor 2	Factor 3
Information Provision			
Corporate information	0.74	0.03	0.15
Learn about financial services	0.73	-0.02	0.04
Complaint information	0.69	0.22	-0.09
Competitor rates	0.65	0.02	-0.27
Experimentation	0.65	0.21	0.11
Bank's own rates	0.64	0.23	-0.26
Account instructions	0.60	0.29	-0.34
Search engine	0.53	-0.02	0.08
Risk Reduction			
Secure connection	-0.06	0.84	0.15
Username	-0.29	0.68	0.43
Quick download	0.30	0.53	-0.32
E-mail to bank	0.45	0.52	-0.13
Confirmation e-mail	0.37	0.52	-0.06
Graphics			
Moving graphics	0.17	0.10	0.83
<i>Eigenvalue</i>	4.44	1.91	1.15
<i>Variance Explained</i>	31.7%	13.7%	8.2%
<i>Cronbach's Alpha</i>	0.81	0.64	na

The factors were labelled after an examination of the variables with the highest loading and with consideration of the preliminary phases of this research.

Factor 1 Information Provision: The expectation fit scores grouped within this dimension are closely aligned to the information search task. For example the top three items with the highest loading are: "Corporate information", "Learn about financial services" and "Complaint information". Three other items that describe the information content of the web site are also grouped within this factor: "Competitor rates", "Bank's own rates" and "Account instructions". The two remaining items

describe the web site attributes that would support an information search task namely the ability to experiment with online banking and also the presence of a search engine. This factor explains the greatest proportion of variation in response (31.7%).

Factor 2 Risk Reduction. The expectation fit scores grouped within this dimension are features that can be considered to reduce risk perceptions. Section 2.12.2 discussed how risk is perceived in terms of Internet use and found that privacy risk (the fear of personal details becoming known) and financial risk (the loss of money as a result of theft or fraud) are important influences on online behaviour. In the context of online banking, financial risk is also associated with the risk of making an error whilst using the web site (Black et al 2001, Lee et al 2005). Furthermore researchers have identified temporal or convenience risk as an influence on adoption (Black et al 2001, Lichtenstein and Williamson 2006).

The items grouped within this factor may be perceived as reducing the likelihood of these risks. For example the highest loading is “Secure connection”, this would reduce both privacy and financial risk. Similarly the requirement to supply a username relates to the protection of personal details. A “Quick download” can be perceived as reducing temporal risk and the ability to engage in two way communication both by e-mailing the bank and receiving a confirmation of actions undertaken can be perceived as reducing or correcting any likelihood of making a mistake when online.

Factor 3 Graphics: This is a single-item factor and the limitations of this as a measure are acknowledged. Within Phase 2 the factor “Technology Thrill” was identified as an evaluative dimension however the highest loading item contained in this factor was not used as it was only relevant if a participant had access to a branch environment. Thus additional items are needed to measure this web site dimension.

5.5.2 Account Access: Exploratory Factor Analysis

Before commencing the analysis the data was assessed against the requirements for this technique thus a visual inspection of correlation and covariance matrices combined with appropriate statistical tests were undertaken. This assessment

indicated that data requirements for factor analysis were met. Statistical tests also indicated that data was sufficient to proceed: Bartlett’s test statistics were chi-square = 1919.33, df= 91, p= .00, the KMO test-statistic was 0.85 and the number of cases to variables was 451: 14 which is a ratio of 32: 1.

Exploratory factor analysis was undertaken using PCA with a varimax rotation. Extraction was conducted using the Kaiser criteria that eigenvalues greater than 1 should be retained. The initial solution contained 3 factors that accounted for 54.2% of the variance in the responses (Table 5.11).

Table 5.11 Factor Loadings: Account Access

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	4.55	32.5	32.5
2	1.86	13.3	45.8
3	1.18	8.4	54.2
4	0.96	6.8	61.1

Factor 4 had an eigenvalue of 0.96 which is very close to the extraction criteria of 1 and examination of the scree plot indicated that a 4-factor solution might be appropriate. The analysis was re-run specifying a 4-factor solution and the rotated component matrix was analysed. The fourth factor had a low alpha of 0.35 and contained two items (“Moving Graphics” and “Search Engine”) that were weakly correlated with each other ($r=0.22$). Thus it was decided to retain the three-factor solution from the first run of the analysis. However in subsequent analysis the alpha for “Learning Environments” was computed as 0.58 and it was indicated that this increased substantially when “Moving Graphics” was deleted. The factor analysis was recomputed without “Moving Graphics” and a three-factor solution was produced that accounted for 56.9% of the variation explained (Table 5.12).

Figure 5.3 Scree Plot: Account Access Difference Scores

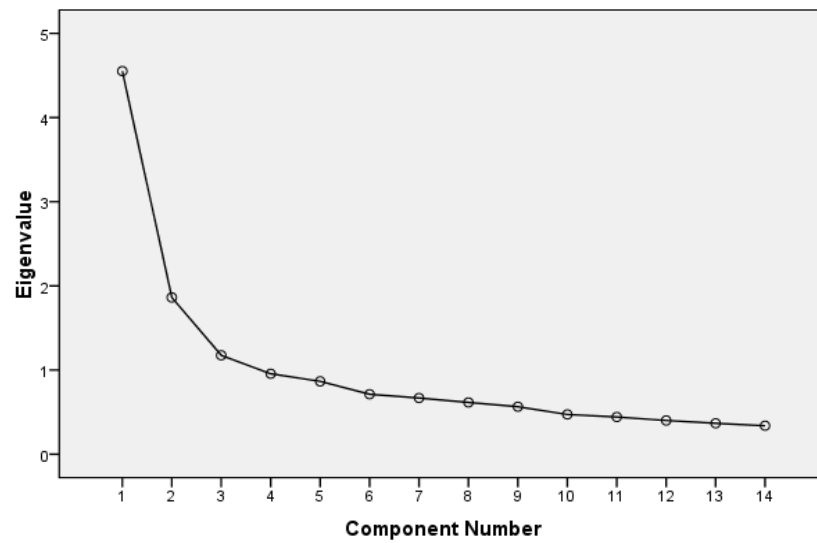


Table 5.12 Exploratory Factors: Account Access Expectation Fit

	<i>Rotated Score</i>		
	Factor 1	Factor 2	Factor 3
Transaction Support			
Account instructions	0.78	0.14	0.10
Bank's own rates	0.73	0.23	-0.02
Confirmation e-mail	0.63	0.08	0.18
Complaint information	0.71	0.31	0.13
E-mail to bank	0.62	0.12	0.35
Competitors' rates	0.56	.41	0.08
Learning Environment			
Learn about financial services	0.35	0.82	0.04
Company information	0.09	0.81	0.06
Experimentation	0.32	0.61	0.34
Search Engine	0.16	0.53	-0.07
<i>Moving Graphics</i>	<i>-0.36</i>	0.58	<i>-0.28</i>
Risk Reduction			
Secure connection	0.21	0.08	0.78
Username	-0.02	-0.10	0.75
Quick Download	0.25	0.17	0.74
Eigenvalue	4.55	1.74	1.10
Variance Explained	35.0%	13.4%	8.5%
Cronbach's Alpha	0.81	0.70*	0.69

*With "Moving Graphics" deleted

The factors were labelled after an examination of the variables with the highest loadings and with consideration of the preliminary phases of this research.

Factor 1: Transaction Support: This factor contains both information provision items and system features that can be considered to support the action of accessing one's account to undertake a transaction. For example the two items have loadings of over 0.80 which is considered to be very high (Hair et al 1998). These items are "Account instructions", "Bank's own rates" and both are information provision items that might be perceived as providing necessary information to assist with a subsequent transaction. The next three items might be perceived as correcting any mistakes that might be made by either the consumer or the bank's personnel. The lowest loading item ("Competitors' rates") relates to the provision of comparative information. This factor explains the greatest proportion of variation in response (35%).

Factor 2: Learning Environment: This factor contains items aligned with information search. For example, the top two items with a loading greater than 0.80 are "Corporate information" and "Learn about financial services". The two remaining items describe the web site attributes that would support an information search task namely the ability to experiment with online banking and also the presence of a search engine.

Factor 3: Risk Reduction: This factor contains three items that have been discussed as reducing perceptions of privacy, financial and convenience risk, namely: "Secure Connection", "Username" and "Quick download".

5.5.3 Summary

The research question being addressed is:

- Can differences in expectation fit be grouped by response into meaningful explanatory factors that indicate the presence of different evaluative dimensions for each task?

The results of this analysis demonstrate that expectation fit scores can be grouped into meaningful evaluative dimensions and that there are several points of similarity and slight differences between these dimensions according to task. This sub-section reported on two exploratory factor analyses. For each task scenario a three-factor solution was formulated.

For information search the factors are: Information Provision, Risk Reduction and Moving Graphics. For the account access the three factors identified are: Transaction Support, Learning Environment and Risk Reduction. There are several points of similarity between the factor solutions. For example both task scenarios contain evaluative dimensions relating to “Risk Reduction”. It is of interest to note that the information search grouping differs the account access scenario. For example, it includes dimensions that can be perceived as reducing or correcting any likelihood of making a mistake when online. These same items are listed within “Transaction Support” for account access.

These results are interpreted with reference to the qualitative phase of the study. Focus groups participants expressed a fear of hitting a button and “doing something stupid” when discussing using a bank web site for information search activity. Thus, a confirmation e-mail might provide information that maybe a transaction made by mistake. In addition, e-mailing the provider would be a convenient method to rectify any mistake. In the context of account access, participants noted that a confirmation e-mail would bring peace of mind that a transaction had been completed as intended. Thus there is a subtle distinction as to whether these attributes act as an indication of success or a warning of a mistake according to task.

It is of interest to note that information items are also featured within the “Transaction Support” and “Learning Environment” groupings for account access. The analysis of normative expectations means for account access indicated that there was general agreement that information provision attributes should be present for account access. In the Phase 1 study when discussing their use of the Internet participants stated that they used online information to inform themselves before undertaking a transaction and that they also tended to perform, simultaneously, several online tasks at once. With reference to the wider body of research relating

consumer search activity (as outlined in Chapter 1) it has been identified that consumers undertake not only goal-directed search activity but also on-going search (Punj and Staelin 1983, Bloch et al 1986, Beatty and Smith 1987). Thus these findings are consistent with the concept of consumers visiting a bank web site for the primary purpose of accessing their account but also wishing to gain exposure to relevant information.

5.6 Section I Summary

Section I has provided answers to the research questions as detailed at the beginning and highlighted throughout this chapter. These research questions are designed to address a need for research that adopts a finer-grained approach to the investigation of e-service and increases understanding of the influence of task context on web site evaluation. The section began by examining and comparing the means of normative expectations for web site attributes according to task. The section then reported the predictive expectations that were held and calculated an expectation fit score for each attribute and compared these according to task scenario. Finally, exploratory factor analysis was used to group expectation fit scores into evaluative dimensions and these were compared according to task scenario.

Overall the results indicate that there are statistically significant differences between task scenarios and that normative expectations are aligned with the task that is under consideration. However in terms of the dimensions of expectation fit there are several points of similarity between the task conditions and there is evidence that visitors place value on certain information attributes when accessing their account online.

There are specific findings of this analysis that provide support for the generalisability of findings from the wider body of literature. There is support for those studies that find that moving graphics are not valued (Joseph and Stone 2003) and that the ability to search quickly and gain access to pricing information is valued (Lynch and Ariely 2000). These results challenge the finding by Van Riel et al (2003) that find that expectations levels do not differ amongst experienced Internet users and one explanation of this difference is the distinction made between task

contexts. This exploratory analysis has developed insight into several areas. There are indications of variation in response for the presence of moving graphics, the provision of security cues when searching for information and the provision of information on competitor's rates. These differences will be explored further in Section II. The findings also indicate that the provision of information is important for both task scenarios.

There are conceptual and methodological implications of these results (Waite 2006). The central role of expectations within the ED research perspective means that it is important for researchers and practitioners to pinpoint the nature of the expectation that has been formed. An increase in understanding of how expectations vary across task may enable marketing practitioners to appropriately "manage" expectations in order to facilitate a positive response (Peters 1998). The findings indicate that there are implications for study design when applying SERVQUAL in an online context. Researchers using this approach should be aware that failure to specify a web site task might influence their results. The finding that expectations vary across task scenario indicates that it is of interest to learn how this variation influences task intention. This will be examined in Section III.

Section II Differences in Response

5.7 Section Introduction

The next stage of the examination was to explore anticipated provision according to socio-demographic and behavioural variables using a reduced set of variables. This section addresses the following research questions:

- Are there any differences in expectation “fit” for each online task according to individual, situational, behavioural or attitudinal characteristics?
- What is the relationship between expectation fit and the extent, nature or duration of bank web site use?

As in Phase 2 consideration was given to how the results of the factor analysis could inform this analysis and it was decided to produce factor scores as opposed to using a surrogate variable or summing values within each dimension. The alpha scores were assessed for each dimension; Hair et al (1998) argue that for exploratory research a lower limit of 0.60 can be considered acceptable. Thus all factors apart from the single factor for “Information provision” meet this requirement.

Factor scores were calculated using regression analysis in which a participant’s score on variables are standardised and then the standardised score is weighted by the factor score coefficients: this approach results in the highest correlation between the factor and factor score (Tabachnick and Fidell 2007). An advantage of using factor scores is that all facets of a dimension are represented whilst at the same time reducing the data for use in subsequent analysis (Hair et al 1998). A further consideration when considering the planned subsequent analysis is that that factor scores tend to be normally distributed and uncorrelated and thus are appropriate for multivariate analysis (Hair et al 1998). Finally in order to confirm the directionality of the factor scores checks were made through correlating the highest loading item for each factor with the factor scores for that dimension and through individual case analysis. All factor scores were strongly and positively correlated with the highest loading item.

This section uses the factors scores in four stages of analysis that explore differences according in expectation fit according to individual characteristics, Internet-related variables, product-related variables and online banking behaviour. The section concludes with a summary.

5.8 Individual Characteristics

This section of the analysis addresses the research question:

- Are there any differences in expectation “fit” for each online task according to individual characteristics?

The individual characteristics under examination are: gender, age, educational attainment and household income. For comparison of two group means (i.e. Gender) independent t-tests were used. Univariate ANOVAs were conducted where there were more than two groups. Post-hoc t-tests, with a Bonferroni adjustment, were used to make multiple comparisons between means. Appendix XI contains tables that give the full results for each of these tests, only those results that are statistically significant are reported in the following sub-sections.

5.8.1 Information Search Scenario

For the information search task scenario a statistically significant difference is present according to gender for one dimension: “Risk Reduction”. Men tend to anticipate over-provision (mean = 0.14) and women under-provision (mean = -0.07) (mean difference = 0.21, $t = 2.19$, $df = 432$, $p = .03$). Thus for men predictive expectation of what will be present on a bank’s web site exceeds normative expectation of what should be present. In contrast women’s normative expectation of what should be present is greater than what they think will be present.

Univariate ANOVA indicates that response differs according to age for “Risk Reduction” and according to educational attainment for “Graphics”. For Age, those who were aged 55-64 years old consider that “Risk-Reduction” attributes are under-provided (mean = -0.43). There are statistically significant differences in this evaluation when compared to two younger age groups. For those aged 16-24 years

(mean = 0.38, mean difference = 0.81, $p = .00$) and those aged 25-34 years (mean = 0.24, mean difference = 0.66, $p = .00$). There were no other statistically significant differences between groups. Thus, those in the 55-64 year age group predict that what will be present will be less than their normative expectations for what should be present.

Responses differ according to educational attainment for one dimension: “Graphics”. Post-hoc t-tests were used to make multiple comparisons between means for this dimension. Those who had attained a GCSE level of education or equivalent consider that this factor is under-provided (mean = -0.35). Thus normative expectation of that graphics should be present is greater than predictive expectations that graphics will be present. There are statistically significant differences between this mean and the means for those who have higher levels of educational attainment. Those who have an undergraduate degree and those who have a post graduate degree tend to consider this attribute to be over provided – that is participants in these groups have higher predictive expectation that graphics will be present compared to normative expectation that graphics should be present. (Under graduate degree mean = 0.24, mean difference = 0.59, $p = .00$, Postgraduate mean = 0.18, mean difference = 0.54, $p = .01$). Univariate ANOVA indicated no statistically significant differences between income bands. An overview of the findings is presented in Table 5.13

Table 5.13 Information Search Expectation Fit and Individual Characteristics

Characteristic	Information Provision	Risk Reduction	Graphics
Gender	None found	Difference present	None found
Age	None found	Difference present	None found
Educational Attainment	None found	None found	Difference present
Household Income	None found	None found	None found

5.8.2 Account Access Scenario

For the account access scenario, there were no statistically significant differences at $p < .05$ between gender groups. Univariate ANOVA for differences in response according to age and household income found no statistically significant results. However, responses differ according to educational attainment for “Transaction

Support”. Post-hoc tests indicates that those who have attained a GCSE level of education or equivalent consider that “Transaction Support” is over-provided (mean = 0.25) and there is a statistically significant difference in this evaluation when compared to those who have an undergraduate degree (mean = -0.19, mean difference = -0.45, $p = .00$). There were no other statistically significant differences between groups. An overview of the findings is presented in Table 5.14.

Table 5.14 Account Access Expectation Fit and Individual Characteristics

Dimension	Transaction Support	Learning Environment	Risk Reduction
Gender	None found	None found	None found
Age	None found	None found	None found
Educational Attainment	Differences Present	None found	None found
Household Income	None found	None found	None found

5.8.3 Summary

For the information search task differences were present according to gender and age for expectation fit for those items contributing to “Risk Reduction”. Women anticipated under-provision whilst men anticipated over-provision. Those in the older age group (55-64 years) considered that “Risk Reduction” was under-provided compared to two younger age groups. These findings are consistent with results from previous studies that show that women perceive online shopping as more risky than men (Forsythe and Shi 2003, Brown et al 2003). These results support the assertion by Howcroft et al (2002) that women have less confidence with regards to online banking. In addition these findings provide support for those studies that find that older age groups are more risk averse to online activity (Forsythe and Shi 2003) and that there are generational differences with regards to online banking (Howcroft et al 2002).

Findings also show that those with lower levels of educational attainment perceive that Graphics are under-provided when compared to those who have an undergraduate degree or above. It may be considered that those who have not gained higher educational qualifications may require graphical depiction to facilitate the

understanding of complex financial information. For example, Harrison et al (2006) in the context of online pensions find that research participants wanted to see such graphical tools such as modellers and calculators to help them understand the worth of their pension.

For account access, differences in individual characteristics were found only with regards to “Transaction Support”. Findings show that those with lower levels of educational attainment perceive that this is over-provided compared to those with higher levels of education who perceive that this is under-provided. This may indicate that those with higher levels of education are more demanding of these features. Equally it may indicate that these features which relate to information provision and interaction with a financial institution are of little value to those with lower educational attainment. For example, in an experimental study relating to accomplishing a set of online tasks van Deursen and van Dijk (2008) found that educational attainment was positively associated with both the number of tasks completed and the amount of time spent on tasks.

5.9 Internet-Related Variables

This section of the analysis addressed the research question:

- Are there any differences in expectation “fit” for each task according to Internet-related variables?

The characteristics under examination are: year of first use, frequency of use, nature of home connection, Internet understanding, Internet ability and Internet involvement.

An examination of the distribution of responses for frequency of use indicated that the majority of participants used the Internet daily (89%) thus it was decided to re-code the responses into two groups: those who were daily users and those who were not. In terms of connectivity responses were coded into those who had broadband at home and those who had other forms of connection. Independent t-tests were conducted to ascertain whether group difference were present

For the other Internet-related variables univariate ANOVAs were conducted. Only 2 participants rated their Internet understanding as less than average, thus given the small numbers, these cases were excluded from the analysis. Only 1 participant rated their Internet ability as less than average, thus given the small numbers, this case was also excluded from the analysis.

5.9.1 Information Search Scenario

For information search, there is a weak statistically significant correlation indicating a very weak negative relationship between the year of first use and “Risk Reduction” ($r = -0.11$, $p = .03$). In terms of Internet involvement there is a weak negative relationship with “Information Provision” ($r = -0.11$, $p = .03$).

Those who were daily users had higher scores (mean = 0.07) for the “Risk Reduction” dimension compared to those who were not daily users (mean = -0.31, mean difference = 0.39, $t = 2.63$, $df = 432$, $p = .01$). Those who did not have broadband at home had different expectations for two dimensions: “Risk Reduction” and “Graphics”. For “Risk Reduction”, those with broadband at home perceived very slight over-provision (mean = 0.07) and those without broadband considered this to be under-provided (mean = -0.24, mean difference = -0.30, $t = -2.20$, $df = 435$, $p = .03$). For “Graphics”, those with broadband at home considered this feature to be very slightly under-provided (mean = -0.02) and those without broadband considered this feature to be over-provided (mean = 0.25, mean difference = 0.27, $t = 31.96$, $df = 435$, $p = .05$).

There are differences in response according to self-rated Internet understanding and according to Internet ability for “Risk Reduction”. Post-hoc t-tests indicate that those who considered themselves to have an “Average” level of Internet understanding considered that “Risk Reduction” attributes are under-provided (mean = -0.29) compared to those who considered their Internet understanding to be “Good” (mean = 0.14, mean difference = 0.43, $p = .01$).

Post-hoc t-tests indicate that those who considered themselves to have an “Average” level of Internet ability considered that “Risk Reduction” attributes are under-

provided (mean = -0.42) compared to those who considered their Internet ability to be “Good” who considered this characteristic to be over-provided (mean = 0.15, mean difference = 0.57, p= .00). Finally those who considered themselves to have a “Better than average” level of Internet ability considered that “Risk Reduction” attributes are under-provided (mean = -0.14) compared to those who considered their Internet ability to be “Good” who considered this characteristic to be over provided (mean = 0.15, mean difference = 0.29, p = .03). An overview of the findings is presented in Table 5.15.

Table 5.15 Information Search Expectation Fit and Internet-Related Variables

Dimension	Information Provision	Risk Reduction	Graphics
Year of first use	None found	Relationship present	None found
Internet Involvement	Relationship present	None found	None found
Daily Use	None found	Differences present	None found
Broadband	None found	Differences present	Differences present
Internet Understanding	None found	Differences present	None found
Internet Ability	None found	Differences present	None found

5.9.2 Account Access Scenario

For account access there was no statistically significant relationship present between year of first use and the three evaluative dimensions. No statistically significant relationship was present for Internet involvement. Those who were daily users anticipated slight over-provision (mean = 0.05) for “Risk Reduction” compared to those who did not use the Internet daily (mean = -0.44, mean difference = 0.49, t = 3.24, df = 54, p = .01). Similarly those who had broadband at home anticipated slight over-provision of “Risk Reduction” attributes (mean = 0.06) compared to those who did not have broadband (mean = -0.38, mean difference = -0.44, t = -2.59, df = 70, p = .01).

There are differences according to self-rated Internet understanding for one dimension: “Learning Environment”. Univariate ANOVA with post-hoc tests indicates that for “Learning Environment” those who consider themselves to have a

“good” level of Internet understanding perceive that these attributes are over-provided (mean = 0.07) compared to those who consider their Internet understanding to be “average” (mean = -0.36, mean difference = 0.43, p= .01).

There are differences according to self-rated Internet ability differences for two dimensions: “Learning Environment” and “Risk Reduction”. For “Learning Environment” the post-hoc tests indicated that those who consider themselves to have a “Good” level of Internet ability perceive that these attributes are over-provided (mean = 0.06) compared to those who considered their Internet ability to be “Average” (mean = -0.30, mean difference = 0.36, p= .05). For “Risk Reduction”, those who consider themselves to have a “Good” level of Internet ability perceive that these attributes are over-provided (mean = 0.08) compared to those who consider their Internet ability to be “Average” (mean = -0.31, mean difference = 0.18, p= .03). An overview of the findings is presented in Table 5.16.

Table 5.16 Account Access Expectation Fit and Internet–Related Variables

Dimension	Transaction Support	Learning Environment	Risk Reduction
Year of first use	None found	None found	None found
Internet Involvement	None found	None found	None found
Daily Use	None found	None found	Differences present
Broadband	None found	None found	Differences present
Internet Understanding	None found	Differences present	None found
Internet Ability	None found	Differences present	Differences present

5.9.3 Summary

For information search and account access, there is a relationship between the expectation fit score for “Risk Reduction” and year of first Internet use, daily usage, broadband at home, Internet understanding and Internet ability. Those who are daily users or who have broadband tend to consider that normative expectations will be met whilst those who use the Internet less frequently or who do not have broadband consider that “Risk Reduction” will not meet their normative expectations.

For information search, recent adopters have lower expectation fit scores compared to later adopters. There is also a very weak relationship between Internet

involvement and “Information Provision” that indicates that the more involved a participant is the more likely the expectation fit score will be decrease. However it should be stressed that this is a very weak relationship.

In terms of ability, for information search those who have “Good” Internet ability anticipate that “Risk Reduction” attributes will exceed their normative expectations as do those who have “Good” understanding compared to those who have “Average” levels of understanding and “Average” and “Better than Average” ability. For account access, those who have “Good” ability anticipate that “Risk Reduction” attributes will meet their normative expectations compared to those who have “Average” levels of understanding and “Average” and “Better than Average” ability who view these features as being under-provided.

Research indicates that an individual’s experience with a service strengthens predictive (will) expectation, whilst normative (should) expectation is not affected (Johnson and Mathews 1997). Thus there is some evidence that should expectations relating to task-risk are acting as a disconfirmation measure for those who are relatively unfamiliar and less confident at Internet use (as suggested by Sirgy 1984). This finding is consistent those online banking studies that find that channel risk is a barrier to online banking adoption (for example Black et al 2001, Gerrard and Cunningham 2003, Lee et al 2005). As was reported in 5.1.3, participants in this study were regular and active Internet users. Thus this research indicates that, in the context of online banking, risk concerns remain far-reaching even with Internet use.

For account access only, there are differences in anticipated provision for “Learning Environment” according to Internet understanding and ability. Those who rate their ability to use the Internet as “Good” and their Understanding as “Good” in general consider that their needs are being met whilst those who rate themselves as “Average” consider that their normative expectations would not be met. This may indicate that individuals who are less confident in their Internet ability and understanding perceive that they have a need to learn more about online banking and do not anticipate that this desire will be met by their bank’s web site. Or it might indicate that for these individuals searching for information is not rewarding

experience. For example in the Phase 1 focus groups participants noted that Internet ability was a positive influence on Internet search outcomes.

5.10 Product–Related Variables

This section of the analysis addressed the research question:

- Are there any differences in expectation “fit” for each online task according to product-related variables?

The characteristics under examination are: current account understanding, current account ability and current account involvement. Only 8 participants rated their current account ability as less than average or poor. Thus, given the small numbers, these were excluded from the analysis. Only 2 participants rated their current account ability as less than average or poor. Thus, given the small numbers these were also excluded from the analysis. Univariate ANOVAs indicated that there were no statistically significant differences for any of these variables for each task scenario.

These findings are of interest. Section 2.13.3.2 notes that there are few studies that examine the influence of product–related variables in the context of online banking. The absence of any differences or relationships between the variables of product involvement, product ability and product understanding provide support to other studies. For example it is possible to consider the number and nature of financial products owned as an indicator of financial ability and understanding. Lockett and Littler (1997) found no link between these variables and adoption in a study that focused on ATM use and telephone banking. In the context of online banking McKechnie et al (2006) found no link between product involvement and a positive attitude towards online banking. This study provides evidence of the generalisability of these findings to both information search and account access tasks.

5.11 Online Banking Behaviour

This section of the analysis addressed the research question:

- Are there any differences in expectation “fit” according to the extent, nature and duration of bank web site use?

The characteristics under examination are: prior visit, year of first visit, frequency of use for account access and frequency of use for information search.

5.11.1 Information Search Scenario

For information search those who had visited their bank web site had statistically significant different scores for “Risk Reduction” (mean = 0.07) compared to those who had not visited their bank web site (mean = -0.47, mean difference = 0.55, $t = 3.35$, $df = 435$, $p = .01$). Non-visitors anticipated under-provision of this characteristic. There is a very weak statistically significant negative correlation between the year of the first visit and “Graphics” ($r = -0.11$, $p = .04$).

Univariate ANOVA indicates that for frequency of account access differences are present for “Risk Reduction”. The post-hoc t-tests indicated that those who report that accessed their account more than 12 times in the previous year consider these attributes to be over-provided (mean = 0.19) compared to those who have not accessed their account online at all (mean = -0.74, mean difference = 0.93. $p = .00$). For frequency search the Univariate ANOVA indicated that differences were present for “Information Provision”. However post-hoc t-tests did not pinpoint any statistically significant differences between groups. Table 5.17 contains an overview of the findings.

Table 5.17 Information Search Expectation Fit and Online Banking Behaviour

Dimension	Information Provision	Risk Reduction	Graphics
Has visited	None found	Differences present	None found
Year of first visit	None found	None found	Relationship present
Frequency of Account Access	None found	Differences present	None found
Frequency of Search	None found	None found	None found

5.11.2 Account Access Scenario

For account access those who had visited their bank web site had statistically significant different scores for “Learning Environment” and “Risk Reduction”. For “Learning Environment”, there was a close fit between the expectations of those who had visited their bank web site (mean = 0.02) whereas those who had not visited

anticipated under-provision (mean = - 0.32, mean difference = 0.34, t = 2.00, df = 435, p = .05). For “Risk Reduction”, those who had visited their bank web site anticipate a slight over-provision of these attributes (mean = 0.05) whereas those who had not visited anticipate under-provision (mean = - 0.53, mean difference = 0.58, t = 2.22, df = 40, p = .03). There is a very weak statistically significant correlation indicating a negative relationship between the year of first bank web site visit and “Learning Environment” (r= -0.13, p= .00).

Univariate ANOVA indicated that for frequency of account access there are differences for “Risk Reduction”. Post-hoc tests indicate that those who report that they have not accessed their account at all consider that these attributes are under-provided (mean= -1.10) compared to those who have accessed their account at some point. Differences are found for between non users and those who have accessed: 1-3 times (mean = 0.18, mean difference = 1.28, p = .00); 4-6 times (mean = 0.57, mean difference = 1.67, p = .00); 7-9 times (mean = 0.04, mean difference = 1.14, p = .00); 10-12 times (mean = 0.28, mean difference = 1.37, p = .00) and more than 12 times (mean = 0.11, mean difference = 1.21, p = .00). In contrast, univariate ANOVA indicated that for previous frequency of search there are no statistically significant differences for each dimension. Table 5.18 provides an overview of the findings.

Table 5.18 Account Access Expectation Fit and Online Banking Behaviour

Dimension	Transaction Support	Learning Environment	Risk Reduction
Has visited	None found	Differences present	Differences present
Year of first visit	None found	Relationship present	None found
Frequency of Account Access	None found	None found	Differences present
Frequency of Search	None found	None found	None found

5.11.3 Summary

For both task scenarios there are differences present between those who have visited their bank’s web site and those who have not for “Risk Reduction”. For both tasks those who are bank web site visitors in general perceive that normative expectations

will be met compared to those who have not visited who predict that their normative expectations will not be met.

For information search, in terms of “Graphics” there is a slight negative relationship with those who are late adopters having a lower expectation fit score compared to earlier adopters. For account access, with regards to “Learning Environment” those who had visited their bank’s web site had a fit between normative and predictive expectations and there was a slight negative relationship between year of first use indicating that later adopters anticipate that there will be under provision.

These findings provide additional support to the arguments presented in Section 5.9.3 that experience strengthens predictive expectation and that “should” expectations are acting as a disconfirmation measure.

5.12 Section Summary

This phase of the analysis addresses the research need to increase understanding of the influence of individual adopter/ non adopter characteristics whilst controlling for Internet adoption. This analysis meets the research objective to explore any differences in response according to individual, socio-demographic, situational and behavioural characteristics. A combination of univariate ANOVA, correlation analysis and t-tests were used to compare how the factor scores derived from Section I differed for each task context.

In Section 1 of this chapter, attributes were highlighted that had standard deviations greater than 1 as evidence that there was a variation in response. Items that were consistently highlighted were “Moving graphics” and “Competitors rates”. Competitor’s rates are grouped within “Transaction Support” for account access and within “Information Provision” for information search. This analysis provides some indication that an explanation for this variation might be due to the differences in educational ability within this sample. This has implications for those studies that have drawn upon undergraduate and post-graduate student samples.

Taken as a whole these results suggest that those individuals who are less technologically confident or who are less familiar with the Internet anticipate that

there will not be sufficient risk measures in place when searching for information on a bank web site. It could be that this reflects the limited degree of exposure that these individuals have with the medium or it might indicate that these individuals have higher perceptions of risk being present. Those without a broadband connection also perceive under-provision of “Risk Reduction”. Those without broadband also considered that “Graphics” were under-provided compared to those with broadband whose expectations were met. This might reflect the cost and time that a dial-up connection takes. Hence any graphics, that may take a long time to download, are viewed as over-provided.

There are implications of these results for research within the DoI research perspective. Section 2.12 outlined how the DoI perspective provides a post-hoc explanation of the factors that contribute towards innovation success, this section detailed how several studies have focused on utilising individual characteristics in explaining online banking patterns. However as was noted in Chapter 2 there has been limited research that has focused on the specific task for which the Internet has been used. These results indicate that there are differences in the influence of socio-demographic and behavioural variables according to task condition.

There are differences between the two tasks that are of interest. For example drawing on the DoI perspective it is possible to consider information search as a low-risk activity that facilitates trial of a web site prior to adoption (Shim et al 2001, Lassar et al 2005). These results show that “Risk Reduction” is a factor that, for the information search task, has more instances of differences between socio-demographic groupings compared to the account access task. Research participants may expect that a bank web site will meet their normative expectations for these features when accessing an account compared to searching for information or it may indicate that research participants perceive information search to be a riskier activity. Risk perceptions will be explored in Section III.

Section III Fit, Risk and Task Intention

5.13 Section Introduction

This section addresses the following two research questions:

- What is the relationship between the degree of expectation fit, risk and task-specific intention to use a bank's web site?
- What is the relationship between expectation fit and perceptions of task-specific risk?

The aim is to explore how expectation fit is related to risk and future intention to use a bank web site for account access or information search.

This section begins with the findings of bivariate analysis (t-tests and correlation) before progressing to multivariate analysis (Logistic regression and OLS regression). First the risk variable is examined, and then correlation analysis is used to examine the relationship between expectation fit and risk. The final stage of the bivariate analysis explores differences in risk perception and expectation fit according to task intention. The multivariate exploration commences with an exploration of the links between risk, expectation fit and intention using logistic regression for each task scenario. Finally OLS regression is used to examine to what extent task specific risk is related to differences in expectation fit. The section concludes with a summary.

5.14 Bivariate Analysis: Intention, Risk and Expectation Fit

This sub-section addresses the following research questions:

- What is the relationship between the degree of expectation fit, risk and task-specific intention to use a bank's web site?

Bivariate analysis explored the relationship between each independent variable and the dependent variable before progressing to multivariate analysis.

Risk was measured using a five-item scale. A score of 1 indicates low perceptions of risk and a score of 5 indicates high perceptions of risk. The scale was uni-

dimensional and internally reliable (Appendix VIII), however it is acknowledged that this is an untested measure. Correlation analysis indicates that there is a strong positive relationship between task-risk scores ($r = 0.75$, $p = .00$, $n = 461$). A t-test for related means (Table 5.19) indicates that participants perceive that information search is a riskier activity compared to account access (mean difference = 0.14, $t = 5.84$, $df = 460$, $p = .00$). For each task condition, risk is correlated negatively to expectation fit apart from “Graphics” and information search risk (Tables 5.20 and 5.21). Thus, as the expectation fit score decreases risk perceptions increase, apart from “Graphics” where risk perceptions increase as expectation fit scores increase. The strength of relationship between variables is generally weak ($R = 0.10$ to 0.29) apart from the relationship between account access risk and “Risk Reduction” which shows a medium strength negative relationship ($R > 0.30$) (Cohen 1988).

Table 5.19 Comparison of Risk Perceptions by Task

	n	Mean	SE	SD	Min	Max
Account Access Risk	463	1.61	0.03	0.74	1	4.60
Search Task Risk	468	1.76	0.03	0.74	1	4.40

Table 5.20 Correlation: Expectation Fit and Search Risk

	Information Provision	Risk Reduction	Graphics
Search Risk	-0.19**	-0.13**	0.10*
Information Provision		-0.03	-0.01
Risk Reduction			-0.02
Graphics			

Note: N= 433 for correlation with Risk; * $p < .05$ ** $p < .01$

Table 5.21 Correlation: Expectation Fit and Account Access Risk

	Transaction Support	Learning Environment	Risk Reduction
Account Access Risk	-0.14**	-0.16**	-0.32**
Transaction Support		0.18	0.00
Learning Environment			-0.01
Risk Reduction			

Note: N= 428 for correlation with Risk; * $p < .05$ ** $p < .01$

Independent t-tests (Table 5.22) indicate that for both task conditions those who are unlikely to undertake either information search or account access in the next 12 months have higher perceptions of task-specific risk. An examination of individual search–risk dimensions found that differences were statistically significant for all

dimensions and that the mean differences between the items were similar (Appendix XI). Thus no single risk dimension was closely associated with search-task intention. An examination of the differences in expectation fit according task intention shows that differences exist for information search intention for only “Risk Reduction” and for account access for “Learning Environment” and “Risk Reduction” (Tables 5.23 and 5.24).

Table 5.22: T-Test: Intention and Risk

Risk	Task	n	Mean	Mean Diff	SE	t df	Sig.
Search Risk	Likely	319	1.55	-0.88	0.10	-9.10 103	.00
	Unlikely	80	2.43				
Account Access Risk	Likely	381	1.41	-1.22	0.11	-10.75 71	.00
	Unlikely	63	2.62				

Table 5.23 T-Test: Search Intention and Expectation Fit

Dimension	Task	n	Mean	Mean Diff	SE	t df	Sig
Information Provision	Likely	301	0.06	0.21	0.13	1.63 373	.11
	Unlikely	74	-0.16				
Risk Reduction	Likely	301	0.07	0.41	0.13	2.72 94	.01
	Unlikely	74	-0.34				
Graphics	Likely	301	0.01	-0.11	0.10	-0.79 373	.43
	Unlikely	74	0.11				

Table 5.24 T-Test: Account Access Intention and Expectation Fit

Dimension	Task	n	Mean	Mean Diff	SE	t df	Sig
Transaction Support	Likely	359	0.02	0.17	0.14	1.26 418	.21
	Unlikely	61	-0.15				
Learning Environment	Likely	359	0.02	0.34	0.14	2.45 418	.02
	Unlikely	61	-0.32				
Risk Reduction	Likely	359	0.15	1.00	0.23	4.23 64	.00
	Unlikely	61	-0.85				

5.14.3 Summary

Information Search is perceived as riskier than account access and “Risk Reduction” is the only element of expectation fit that is related to intention. This finding provides support to the interpretation of the results in Section 5.13 that suggested that greater expectations of risk might explain why there are more instances of differences amongst socio-demographic groups for information search. This finding is consistent with the fact that research participants undertook information search less

frequently than account access activity. Perceptions of risk might be deterring information search. Although, it can also be contended that lack of familiarity with the online activity might heighten perceptions of risk. Thus, additional research is needed to explore the direction of this relationship. However, this finding has implications for research within the DoI perspective, which argues that information search is a low-risk, divisible element of online activity. This finding provides evidence that within the context of online banking this assertion can be questioned.

For account access, expectation fit scores differ according to intention for “Risk Reduction” and “Learning Environment”. This is additional evidence that the research participants value the facility to engage in ongoing information search whilst accessing their account. This was highlighted in Section 5.5.3.

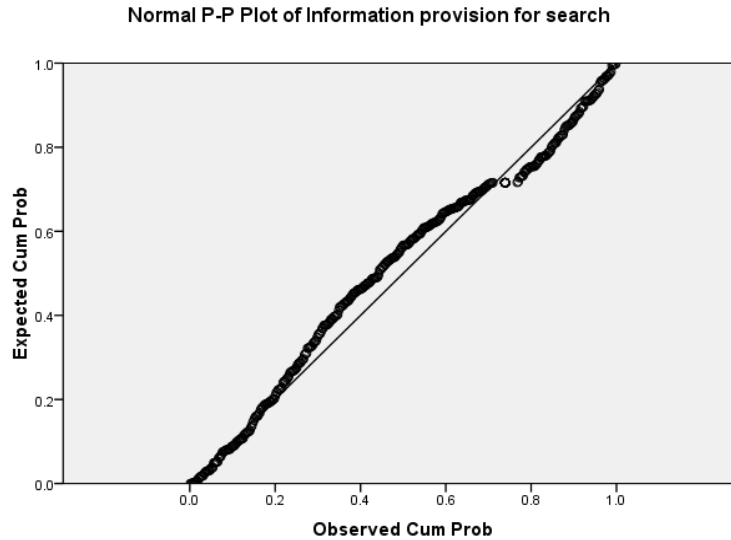
5.15 Multivariate Analysis

This section describes how OLS and Logistic Regression were used to explore the relationships between expectation fit, task-specific risk and task intention. These techniques are approaches within the general linear model (as defined by Nelder and Wedderburn 1972). This model extends standard linear regression techniques to models with responses that violate the assumptions of a normally distributed regressor (Cohen et al 2003). Appendix VI presents: an overview of each technique, the options that were considered and the data requirements underpinning each technique.

5.15.1 A-Priori Screening

Statistical textbooks outline a range of screening techniques that are used to assess the quality of the data (see for example Hair et al 1998, Tabachnick and Fidell 2007, Field 2007). Following these guidelines, prior to data entry all variables were screened for departures from assumptions of normality, multicollinearity, singularity and presence of outlying cases. Normal PP plots were generated for all variables. Figure 5.4 shows the probability plot for “Information Provision” for the search task scenario. Normality is indicated when response plots are clustered around a straight-line (Norusis 2006). All plots indicated that normality was present.

Figure 5.4 Normality Probability Plot



To check for multicollinearity and singularity bivariate correlation matrices were generated (Table 5.20 and 5.21) and there was no correlation greater than the cut-off recommended of .70 (Berry and Feldman 1985). Finally to identify outlying cases all variables were inspected to identify if the distribution of cases resulted in less than 95% of cases being more than 1.96 standard deviations from the mean, all variables met this condition and analysis proceeded

5.15.2 Variable Entry

Appendix VI discusses the options relating to the order that variables are entered into the multivariate model. For both regression analyses a single-step of entry was selected as compatible with the exploratory nature of the study. Single-step entry identifies those regressor variables that have the strongest relationship with the regressed variable when controlling for any correlation with the other regressor variables (Cramer and Howitt 2004). The single-step method is preferable “where there are no specific hypothesis about the order or importance of predictor variables” (Tabachnick and Fidell 2007: 454). Thus this was selected as a technique that would generate insight into the relationship between the variables under examination.

5.16 Logistic Regression: Task Intention as Regressed Variable

Logistic regression was used to explore the relationship between task intention, which was transformed to be a dichotomous variable, and task-specific risk and expectation fit, which were measured using a continuous variable. The aim of this analysis is to explore the contribution of task risk and expectation fit towards self-rated likelihood to use a bank's web site for a particular task. Thus the following research question is re-examined using an approach that combines these variables:

- What is the relationship between the degree of expectation fit, risk and task-specific intention to use a bank's web site?

5.16.1 Sampling Adequacy

For logistic regression guidelines for sampling adequacy state that the ratio of cases to variables should be a minimum of 10:1 in for the smallest observed category (Hosmer and Lemeshow 2000).

- For information search, there are four variables and the number of cases in the smallest observed category is 73, taking into account missing cases.
- For account access, there are four variables and the number of cases in the smallest observed category is 58, taking into account missing cases

5.16.2 Model Evaluation

The baseline model is one that contains only the constant and which classifies every participant to the category that has the most observed cases (Field 2007). This is intention to undertake the task. A chi-square value determines whether the inclusion of the regressor variables improves the predictive power of the baseline model. A significant chi-square for variables not in the equation indicates that the coefficients for these independent variables are significantly different from zero.

- For information search intention the chi-square for variables excluded from the constant only model are Chi-square = 91.50, df = 4, p = .00.

- For account access intention the chi-square for variables excluded from the constant-only model are Chi-square = 150.39, df = 4, p= .00

Thus individually or in combination the independent variables make a statistically significant improvement to the predictive power of the baseline model and it is appropriate to proceed with further analysis. (Field 2007).

Another measure of goodness of fit is the Hosmer and Lemeshow test statistic. This test creates ten ordered groups based on estimated probability of group membership and then compares predicted and observed probability values (Tabachnick and Fidell 2007). A non-significant result indicates goodness of fit. The degrees of freedom for this model are $g-2$, where g is the number of groups that were estimated from the data (Hosmer and Lemeshow 2000).

- For information search intention the goodness of fit index is Chi-square= 13.88, df = 8, p= .09.
- For account access intention the goodness of fit index is Chi-square= 6.10, df= 8, p= .64

Thus the inclusion of the regressed variables indicates an improvement in goodness of fit between the predicted values and the data.

5.16.3 Variance Explained by Model

Whilst the Hosmer and Lemeshow test indicates goodness of fit it is possible to have a non-significant result even if the model explains only a negligible amount of variance in the dependent variable (Cohen et al 2003). Therefore it is important to measure the strength of association between the regressed and regressor variables. There are several measures of explained variance that are analogous with r-square in OLS regression (see Menard 2002). Field (2007) recommends examining a range of measures due to problems of either over or under estimation of variance explained for individual measures and then calculating an average r-square. Three measures are given in Table 5.25, Cox and Snell's measure R^2_{CS} and Nagellkerke's measure R^2_N

and Hosmer and Lemeshow's measure (R^2_L). This is calculated by dividing the model chi-square by the $-2LL$ statistic of the baseline model.

Table 5.25 Measures of R-square for Task-Intention

	Information Search Intention	Account Access Intention
R^2_L	.25	.45
R^2_{CS}	.22	.31
R^2_N	.35	.55
Average R^2	.27	.44

The average R-square for both models is greater than 0.26 that indicates a “large” explanatory ability (Cohen 1988, Kirk 1996). However in the context of technology adoption Venkatesh et al (2003: 40) find that models “usually explain about 40% of the variance in intention to use a specific technology” and thus only the account access model matches this standard.

5.16.4 Analysis of Coefficients

Tables 5.26 and 5.26 give the model coefficients for the influence of task-specific risk on task intention. The Wald statistic is analogous to the t-statistic in OLS regression and is derived by dividing the beta coefficient by its standard error. The beta value, whilst analogous to beta value in OLS regression, represents the change in the logit of the dependent variable associated with one unit change in the independent variable (Field 2007). The ExpB is the beta value exponentiated by the natural log and indicates the change in odds resulting from a unit change in the independent variable. It is not a measure of the strength of the relationship between the dependent and independent variable (Menard 2002).

Table 5.26 Logistic Regression: Information Search

Regressor	Beta	SE	Wald	Df	Sig	ExpB	95% CI for ExpB	
							Lower	Upper
Constant	4.92	0.52	89.93	1	.00	137.43		
Search risk	-1.77	0.23	57.94	1	.00	0.17	0.11	0.27
Risk Reduction	0.18	0.15	1.33	1	.25	1.19	0.88	1.61
Information Provision	-0.06	0.16	0.12	1	.73	0.95	0.70	1.29
Graphics	0.00	0.15	0.00	1	.99	1.00	0.75	1.34

Table 5.27 Logistic Regression: Account Access

Regressor	Beta	SE	Wald	Df	Sig	ExpB	95% CI for ExpB	
							Lower	Upper
Constant	6.61	0.68	95.60	1	.00	741.45		
Account Access risk	-2.42	0.30	64.97	1	.00	0.09	0.05	0.16
Risk Reduction	0.49	0.16	9.25	1	.00	1.63	1.19	2.24
Transaction Support	-0.09	0.21	0.18	1	.67	0.91	0.60	1.39
Learning Environment	0.08	0.21	0.14	1	.71	1.08	0.72	1.64

An ExpB value greater than one indicates an increase in the odds of an event occurring and a value less than one indicates a decrease in the odds of an event occurring (Field 2007). Subtracting one from the ExpB value and multiplying by 100 gives the percentage change in the odds of the outcome event occurring (Pampel 2000).

- For information search the value of ExpB for search risk is less than one indicating that the odds of having an intention to undertake a task decrease as perceptions of task risk rise. Thus a one unit increase in perceptions of search risk reduces the odds of intending to search by 0.83 or by 83%.
- For account access the value of ExpB for the significant variables are: account access risk and “Risk Reduction”. The ExpB for account access risk is less than one, thus a one unit increase in account access risk perception reduces the odds of undertaking the task by .91 or 91%. The ExpB for “Risk Reduction” is 1.63, thus a one unit increase in “Risk Reduction” increases the odds of undertaking the task by .63 or 63%.

5.16.5 Model Classification Ability

Model sufficiency can be assessed by its classification ability (Cohen et al 2003). This is defined as the proportion of cases correctly classified. In logistic regression the predicted value of a case is its predicted probability of being in either the event (Y= 1) or non-event (Y= 0) category. Therefore each case is predicted group

membership on whether the predicted probability exceeds a cut-off value. The predicted statistical group membership is then compared to the observed group membership using a 2 x 2 classification table

Cohen et al (2003) note that the choice of cut-off is a critical issue in classification, they cite Neter et al. (1996) who suggest three criteria:

- (1) “use a cut-off of .5, such that if the predicted probability of being a case is greater than .5 the individual is classified as a case;
- (2) select the cut-off that leads to the most accurate classification through a process of trial and error; and
- (3) use some a priori information about the proportion of cases versus non-cases in the population (p 516)”.

Hair et al (1998:265) note that where there is uncertainty that the population proportions are represented in the sample then equal probabilities should be assumed but “if the sample is randomly drawn we can be reasonably sure that it does reflect the population proportions”. Whilst this study utilises a random sampling technique its sampling frame was limited to a permission-based list therefore it was decided to retain the .5 cut-off classification point and the results of this classification are contained in Tables 5.28 and 5.29.

Table 5.28 Classification Table of Search Risk

Observed Class Membership	Predicted Class Membership		<i>Row Total</i>
	No Intention to Search	Intention to Search	
No Intention to Search	29	44	73
Intention to Search	16	282	298
Column Total	45	326	371

Table 5.29 Classification Table of Account Access Risk

Observed Class Membership	Predicted Class Membership		<i>Row Total</i>
	No Intention to Access	Intention to Access	
No Intention to Access	33	25	58
Intention to Access	9	344	353
Column Total	42	369	411

Predictive efficiency was measured by comparing four measures to the baseline rate: sensitivity, specificity, R^2_{Count} , R^2_{AdjCount} (Table 5.30).

Table 5.30 Comparative Predictive Efficiency for Task Risk

	Information Search Intention	Account Access Intention
Baseline Rate	80.3%	85.9%
Sensitivity	96.4%	97.4%
Specificity	39.7%	57.0%
R^2_{Count}	83.8%	91.7%
R^2_{AdjCount}	0.18	0.41

Sensitivity is “the proportion of actual cases that are classified as cases” and specificity is “ the proportion of non-cases who are classified as non-cases” (Cohen et al 2003:516). For both task scenarios the models show high sensitivity. Specificity is poor for the information search model at 39.7%. The account access model performs better with specificity of 57%, however a third of cases are still mis-allocated.

R^2_{Count} is the proportion of correct classifications (hits plus correct rejections).

$$R^2_{\text{Count}} = \frac{\text{Hits} + \text{Correct Rejections}}{n}$$

R^2_{AdjCount} is the proportion of additional classification accuracy gained by the model over and above the base rate.

$$R^2_{\text{AdjCount}} = \frac{\text{Hits} + \text{Correct Rejections} - n_{\text{max}}}{n - n_{\text{max}}}$$

For information search the R^2_{Count} is only 3.5% more than the baseline rate and the R^2_{AdjCount} shows that the proportion of additional accuracy is just 0.18. The Account access model performs better and explains 5.8% more than the baseline model and has a R^2_{AdjCount} of 0.41

Thus the account access model has better predictive efficiency compared to the information search model. Cohen et al (2003) note that it is possible to have a well-fitting model in terms of predicted values and low classification accuracy above the

base rate. In particular they note that “poor classification results in the face of a well-fitting model may particularly occur when we are predicting rare events” (Cohen et al 2003: 518). In this instance given low proportion of non-intention for both task scenarios in the sample it can be considered a rare event.

5.16.6 Model Diagnostics

Menard (2002) proposes a process of model diagnostics that includes a test for collinearity, the Box-Tidwell test for non-linearity in the logit and an examination of the Studentised residual, the leverage value and the dfbeta values to identify any extreme cases. Table 5.31 summarises the model diagnostics. For collinearity any values over 10 are a cause for concern (Myers 1990).

Table 5.31 Summary of Model Diagnostics

Diagnostic Measure		Search Risk	Account Access Risk	Account Access Risk Reduction
Collinearity	VIF	N/A	1.19	1.13
Non-Linearity (Box-Tidwell)	p value for Task risk	p= .71	p= .58	p= .67
Outliers	Studentised Residual number of cases > 2.58	0	4	3
Influence of Outliers	Average leverage value (number of cases)	.01 (38)	.01 (44)	.01 (13)
	Cases with predicted probability >.90	0	0	0
	Cases with predicted probability <.10	0	0	0
Change in model fit for outlier deletion	Cooks’s Distance number of cases >1	0	0	0
	Dfbetas >1	0	0	0

The Box-Tidwell test involves transforming any independent variable by multiplying it by its natural logarithm and adding this term to the equation. If this transformed coefficient is statistically significant then there is non-linearity in the relationship between the logit of the dependent variable and the independent variable (Hosmer and Lemeshow 2000). The results of this test were non-significant for the regressors in both models.

Values of all logistic regression residuals are assumed to be binomially distributed which will approach normal distribution for large samples (Menard 2002). Therefore any studentised residual values greater than ± 2.58 indicate that the case is an outlier and should be examined (Field 2007). However Menard (2002) notes that, for large samples, it can be anticipated that 5% of cases will be outliers due to random sampling variation. For both models no outliers were detected.

The leverage statistic indicates the influence of each individual case on the model fit. Values should be compared with the expected average value for the model, which is calculated as $k+1/N$ where k = number of regressors and N is the sample size (Field 2007). In both models several cases were identified as having greater than average influence. Hosmer and Lemeshow (2000) recommend that the predicted probability of a case should be examined before interpreting high leverage measures. Only cases with predicted probabilities between .10 and .90 should be considered for deletion since these values are assured “to increase with the increasing distance from the centroid of the predictor space” (Cohen et al 2003: 513). Neither model had any cases with greater than average leverage.

A final measure for assessing whether deletion of an outlying case is justified is the change model goodness of fit indicated by the chi-square statistic (Menard 2002: 84). The change chi-square (Cook’s Distance) indicates how much the residuals of all cases would change if a case was excluded from the calculation (Norusis 2006). A value greater than 1 is considered problematical (Stevens 1992). A second measure of the impact of deletion is the $dfbeta$ statistic which is a standardised indicator of the change for an individual beta coefficient if a case is deleted and any value greater than ± 1 is problematical (Field 2007). Neither model had any cases that were identified as candidates for deletion. Thus after completing diagnostic process it is concluded that both models met the assumptions of the logistic regression technique.

5.16.7 Summary

This sub-section addresses the following research question:

- What is the relationship between the degree of expectation fit, risk and task-specific intention to use a bank's web site?

From these results it can be seen that risk has a statistically significant influence on intention in both models. In terms of information search task specific risk is the only variable identified as influencing intention and no expectation fit score has a direct relationship. For account access, risk and “Risk Reduction” expectation fit influence task specific intention indicating that “Risk Reduction” expectation fit has a direct relationship with intention to undertake this task. In other words, both risk perceptions and the positive anticipation of “Risk Reduction” measures influence the likelihood of an Internet user accessing their account online. The implications of these findings taken together with the following analysis are discussed in Section 5.18.

5.17 OLS Regression: Task Risk as Regressed Variable

OLS regression was used to explore the relationship between task-specific risk and expectation fit, which are continuous variables. The aim of this analysis is to explore the contribution of expectation fit towards task-specific risk. Thus the following research question is re-examined using an approach that combines these variables:

- What is the relationship between expectation fit and perceptions of task-specific risk?

5.17.1 Sampling Adequacy

Regarding sample size, Tabachnick and Fidell (2007: 123) suggest that: $N \geq 50 + 8m$ (where m is the number of regressors) for testing the multiple correlation and $N \geq 104 + 8m$ when testing individual regressors. When conducting assessments of both the multiple correlation and the individual variables they advise calculating both equations and adopting whichever requirement is greater. For each task scenario there are 3 regressors, thus the minimum sample size is 107 cases. The number of cases for information search = 432 and for account access = 427, thus there are sufficient cases to proceed with the analysis.

5.17.2 Model Evaluation

The baseline model in OLS regression is the mean. An F ratio statistic is derived to test whether the model including the variables makes a significant improvement in prediction compared to the baseline model.

- For information search risk, $F = 9.69$, $df = 3, 429$, $p = .00$.
- For account access risk, $F = 24.09$, $df = 3, 424$, $p = .00$.

Thus for both task scenarios the F ratio is statistically significant and including expectation fit variables improves prediction compared to the baseline model.

5.17.3 Variance Explained by Model

The Pearson product-moment correlation coefficient (R) indicates that the strength of the relationship between the observed and the predicted values of the regressed variable. Thus:

- For information search $R = 0.25$
- For account access risk $R = 0.38$

The R-value for neither task indicates a strong relationship, the value for account access indicates a medium relationship and the value for information search indicates a small relationship (Cohen 1988).

Adjusted R^2 is the population value of R adjusted for expected sample inflation and thus is an estimate of explained variance if the model were to be applied to another data set from the same population (Norusis 2006). It is also a standardised measure that takes into account the number of independent variables in the model (Cohen et al 2003).

- For information search adjusted $R^2 = 0.06$, $SE = 0.72$
- For account access risk adjusted $R^2 = 0.14$, $SE = 0.67$

For the information search model, the value Adjusted R^2 is considered a medium effect, since the value is between 0.03 and 0.13. For the account access model, Adjusted R^2 is considered a large effect, with a value within the range 0.14 to 0.26 (Cohen 1988). However the Adjusted R^2 indicates that there remains a substantial degree of variability in perceived task risk that is unaccounted for in each model. Furthermore, these results are disappointing when compared to the standard of 40% of variance in intention to use explained by technology adoption models (Venkatesh et al 2003) and provides additional indication that there are unaccounted influences on risk perceptions.

5.17.4 Analysis of Coefficients

Tables 5.32 and 5.33 give the model coefficients for the influence of expectation fit on perceptions of task-risk.

Table 5.32: Regression: Information Search Risk and Expectation Fit

Regressed = Information Search Risk N= 432

Model	B	SE	Standardised Beta	t	Sig	CI at 95%	
						Lower	Upper
Constant	1.76	0.04		50.67	.00	1.69	1.82
Information Provision	-0.14	0.04	-0.19	-4.14	.00	-0.21	-0.07
Risk Reduction	-0.10	0.04	-0.14	-2.95	.00	-0.17	-0.03
Graphics	0.07	0.03	0.09	1.93	.06	.00	.13

For the information search task (Table 5.32) “Graphics” does not make a contribution to Information Search Risk. “Information Provision” and “Risk Reduction” are negatively related to search risk perceptions. This indicates that as scores increase then risk perceptions decrease. An increase in the scores would represent expectation matching or exceeding prediction. The standardised beta weights show the relative contribution of each item, the item that contributes the most is “Information Provision”.

Table 5.33 Regression: Account Access Risk and Expectation Fit

Regressed = Account Access Risk N=427

Model	B	SE	Standardised Beta	t	Sig	CI at 95%	
						Lower	Upper
Constant	1.59	.03		48.55	.00	1.52	1.65
Transaction Support	-0.09	.03	-0.13	-2.84	.01	-0.16	-0.03
Learning Environment	-0.11	.03	-0.16	-3.54	.00	-0.18	-0.05
Risk Reduction	-0.23	.03	-0.32	-7.17	.00	-0.30	-0.17

For the account access task (Table 5.33) all expectation fit variables make a statistically significant contribution to the account access risk variable. All variables have a negative relationship with the dependent variable, that is as factor scores increase then perceptions of task risk fall. Examination of standardised beta weights shows that the variable that makes the largest contribution is “Risk Reduction”.

5.17.5 Model Diagnostics

Post-hoc graphical and statistical model diagnostics were undertaken to test data assumptions. Graphical analysis began with the inspection of histograms for multivariate normality. Second a scatterplot of the standardised residual of the model against the standardised predicted dependent variable was examined to detect any heteroscedasticity. For this test a “random array of dots evenly dispersed around zero” is desired (Field 2007).

Finally there was an inspection of the partial scatterplots of the residuals of the dependent variable and each independent variable when both variables are regressed on the remaining independent variables (Field 2007). These plots detect any non-linearity between error terms of the dependent variable and independent variable, the existence of possible influential cases and heteroscedasticity. Points should be randomly dispersed around a regression line in the partial scatterplots (Field 2007).

Statistical analysis commenced with the calculation of average tolerance values and variance inflation factors (VIF) to identify any multicollinearity. For the data the average VIF values was close to one and the tolerance values were greater than .20 indicating that assumptions have been met (Hair et al 1998, Menard 2002). Finally the Durbin-Watson test statistic was derived:

- For information search the Durbin-Watson test statistic = 1.96
- For account access the Durbin-Watson test statistic = 1.96

This is a measure of the independence of error terms and values between 1.5 and 2.5 are acceptable (Norusis 2006).

For information search, graphical display of the distribution of residuals indicated that there was a positive skew (Figure 5.5). This indicates that the model containing differences in expectation fit overestimates of search risk perception.

Figure 5.5 Standardised Residuals from Information Search Model

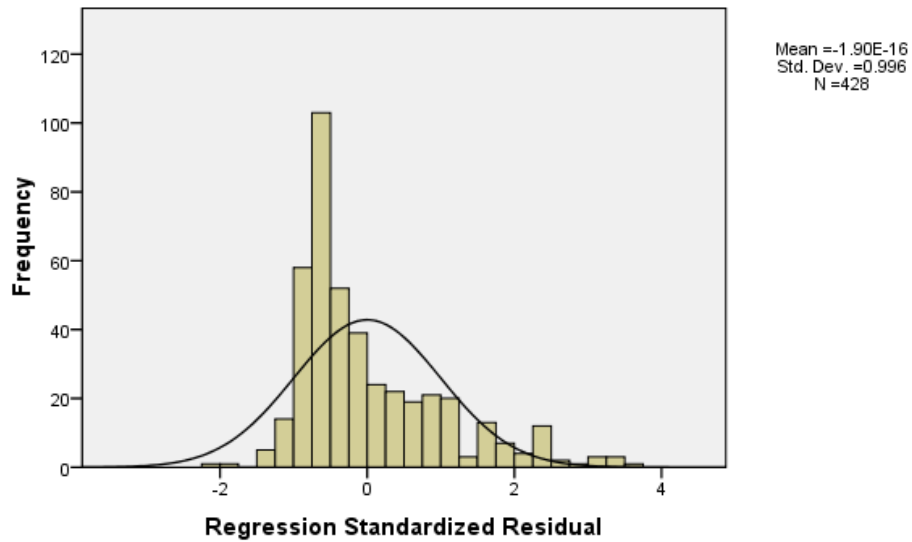
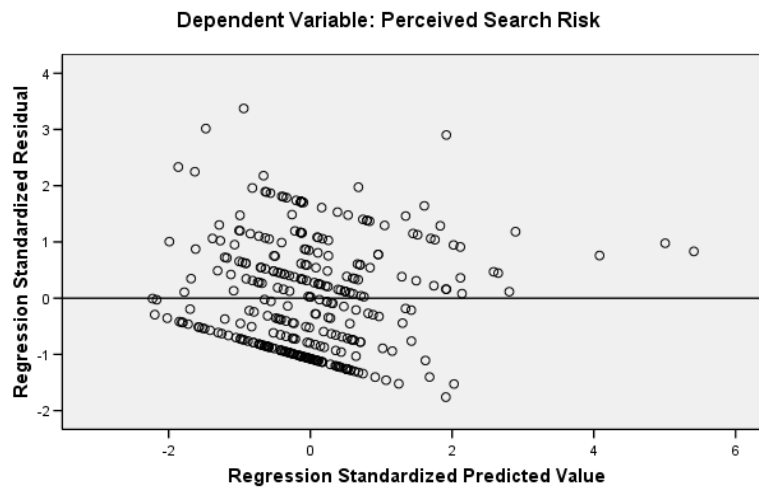


Figure 5.6 Standardised Residual and Predicted Values for Information Search Model

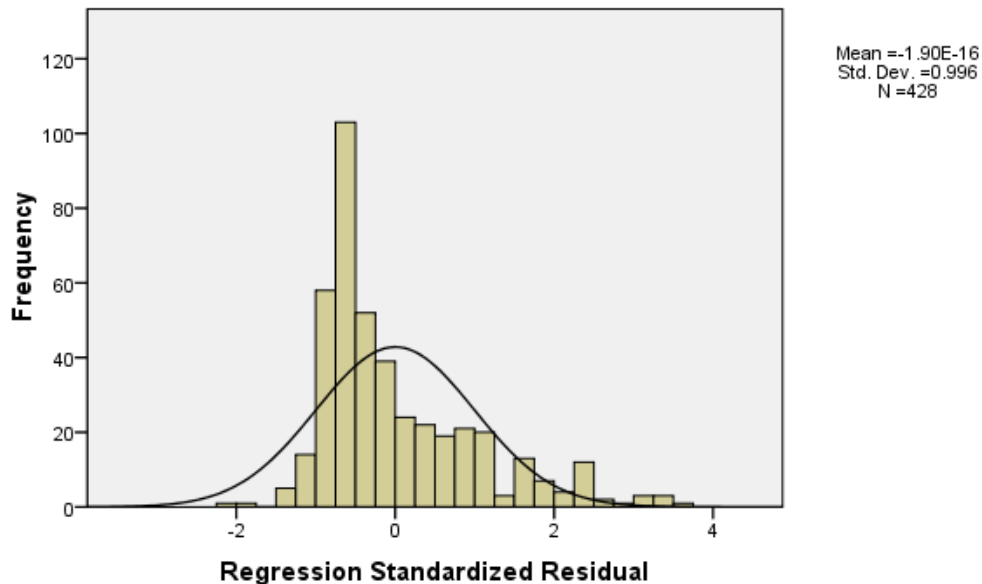


In addition inspection of the scatterplot of standardised residual and predicted values (Figure 5.6) revealed a diamond shape as a result of greater “variation in the midrange than at the tails” and thus the presence of heteroscedasticity (Hair et al 1998: 175). Given the low adjusted R-square for the model it can be assumed that heteroscedasticity is linked to specification error and that a more complete model would correct this problem (Berry and Feldman 1985).

Partial scatterplots of each of the regressors confirmed that heteroscedasticity was a problem, but that relationships were linear and that there were only a small number of outlying cases. Overall the number of multivariate outliers were acceptable. Outliers were those identified as having a standardised residual >2.00 and only 2% (n=6) of cases had a score greater than this with the highest value being 3.38. Multicollinearity and singularity were not problems.

For account access, graphical representation of the distribution of residuals had a positive skew indicating overestimation is a problem (Figure 5.7).

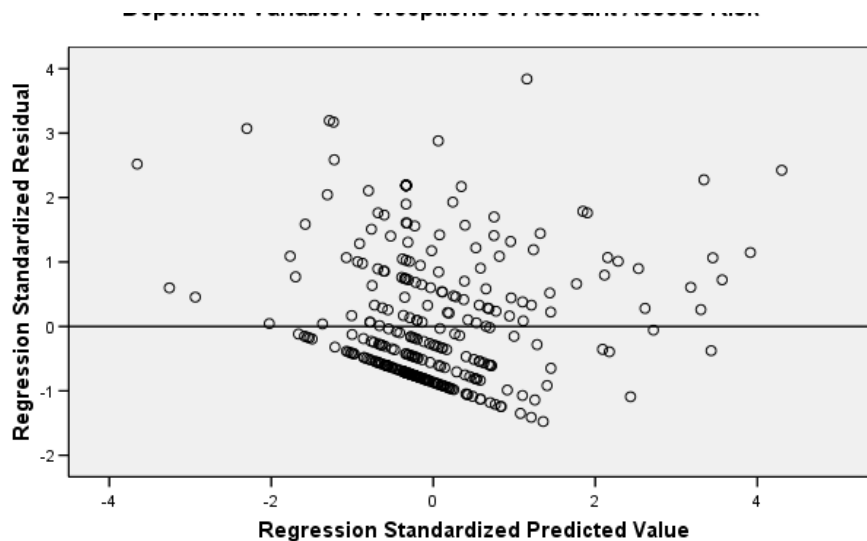
Figure 5.7 Standardised Residuals: Account Access



The scatter-plot of standardised values showed a concentration of variation at the midpoint but also a slight curve indicating the presence of non-linearity as well as heteroscedasticity (Figure 5.8). Partial scatterplots indicated confirmed the presence

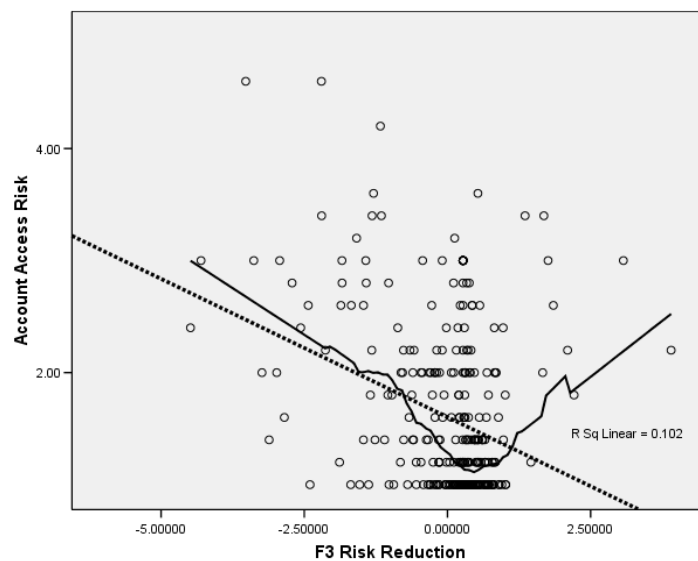
of heteroscedasticity and that the number of multivariate outliers was acceptable (5%, n=17). Multicollinearity and singularity were not problems, with average VIF and Tolerance values being acceptable and the Durbin-Watson statistic being 1.90.

Figure 5.8 Standardised Residual and Predicted Values for Account Access Model



To investigate non-linear effects a Loess curve and a linear reference line were plotted onto partial scatter plots and bivariate scatterplots of observed data (Cohen et al 2003). This process revealed a non-linear relationship between “Risk Reduction” and perceptions of account access risk (Figure 5.9). The non-linear relationship between “Risk Reduction” and perceived access risk can be characterised as one where as soon as normative expectations are exceeded then risk perceptions begin to rise. One path for future analysis would be to include a polynomial term within the model and to test any increase in model fit for statistical significance, another alternative would be to transform the variables to “linearise” the relationship (Cohen et al 2003). However, this strategy would be best implemented with a fresh data set to avoid over-fitting the data. Tabachnick and Fidell (2007) argue whilst curvilinearity reduces measures of model fit it does not invalidate a linear model.

Figure 5.9 Scatterplot for Risk Reduction and Account Access Risk



5.17.6 Summary

This sub-section addressed the following research question:

- What is the relationship between expectation fit and perceptions of task-specific risk?

An exploration of expectation fit as antecedents of risk shows task differences. For the information search task “Graphics” does not make a contribution to information search risk. “Information Provision” and “Risk Reduction” are negatively related to search risk perceptions. This indicates that as scores increase then risk perceptions decrease. An increase in the scores would represent expectation matching or exceeding prediction.

For the account access task situation all expectation fit variables make a statistically significant contribution to the account access risk variable. All variables have a negative relationship with the dependent variable, that is as factor scores increase then perceptions of task risk fall. Examination of standardised beta weights shows that the variable that makes the largest contribution is “Risk Reduction”. There is

evidence of a non-linear relationship between “Risk Reduction” and account access risk, in that as soon as normative expectations are exceeded then risk perceptions begin to rise. There is scope for further exploration of this finding in subsequent research.

5.18 Section Conclusion

Section III has provided the answers to the following research questions:

- What is the relationship between the degree of expectation fit, risk and task-specific intention to use a bank's web site?
- What is the relationship between expectation fit and perceptions of task-specific risk?

Overall the results show risk has a statistically significant influence on intention in both task scenarios. For information search the explanatory ability of the model does not meet the standard of 40% of variance explained proposed by Venkatesh et al (2003). Hence there is scope to explore additional influences on intention to seek information using an bank web site. For account access the explanatory ability of the model containing risk and expectation fit factors meets the standard proposed by Venkatesh et al (2003). However the influence of expectation fit scores on intention is limited with only the “Risk Reduction” group of attributes having a direct effect for the account access task.

These findings provide support for other studies into online banking that have concluded that risk is a significant barrier to adoption (for example, Sathye 1999). This is particularly interesting since this study has purposively sampled Internet users and thus has controlled to some extent for risk-factors relating to non-adoption of the channel itself. Thus this finding provides support for the assertion that online banking is viewed as an inherently “risky” activity whether for account access or information search (Curran and Meuter 2005).

The results of OLS regression showed task differences in expectation fit as an antecedent to task-specific risk. For information search where predictive (will)

expectation meets or exceeds normative (should) expectation for “Information Provision” and “Risk Reduction” then risk perceptions fall. For account access where predictive expectation meets or exceeds normative expectation for “Transaction Support”, “Learning Environment” and “Risk Reduction” then risk perceptions fall. For both models the fit between the expectation fit factors and risk is generally consistent with the task under consideration. For example, if there was an anticipation that the information provided online would not meet one’s needs then one would consider using a bank web site for information search to be risky.

However for the account access scenario the statistical significance of “Learning Environment” and the contribution of the variable to the prediction is of interest. This finding generates the insight that when considering account access individuals place value on the provision of information and that the provision of this information reduces risk perceptions. Taken with the findings reported in 4.4.4.1 into the nature of online information desired on a bank web site amongst focus group participants the results reported here provide a strong indication that there is need for increased information provision to prospective and current online banking customers (Sarel and Marmostein 2003).

5.19 Chapter Conclusion

This chapter has presented the findings of the third phase of research. Section I has provided answers to the research questions as detailed at the beginning and highlighted throughout this chapter. These research questions are designed to address a need for research that adopts a finer-grained approach to the investigation of e-service and increases understanding of the influence of task context on web site evaluation. The section began by examining and comparing the means of normative expectations for web site attributes according to task. The section then reported the predictive expectations that were held and proceeded to calculate an expectation fit score for each attribute and compared these according to task scenario. Finally, exploratory factor analysis was used to group expectation fit scores into evaluative dimensions and these were compared according to task scenario.

Overall the results indicate that there are statistically significant differences between task scenarios and that normative expectations are aligned with the task that is under consideration. However in terms of the dimensions of expectation fit there are several points of similarity between the task conditions and there is evidence that when accessing an account bank web site visitors place value on certain information attributes.

Section II of the analysis addressed the research need to increase understanding of the influence of individual adopter/ non adopter characteristics whilst controlling for Internet adoption. This analysis meets the research objective to explore any differences in response according to individual, socio-demographic, situational and behavioural characteristics. A combination of univariate ANOVA, correlation analysis and t-tests were used to compare how the factor scores derived from Section I differed for each task context. This analysis provides some indication that an explanation for this variation might be due to differences in educational ability within this sample. This has implications for those studies that have drawn upon undergraduate and post-graduate student samples.

Section III examined the relationship between expectation fit, risk and task intention. The results of logistic regression analysis showed that risk has a statistically significant influence on intention in both models. In terms of information search, task-specific risk is the only variable identified as influencing intention and no expectation fit score has a direct relationship. For account access, both risk and expectation fit for "Risk Reduction" influence task specific intention. This indicates that "Risk Reduction" expectation fit has a direct relationship with intention to undertake this task. In other words, not only do risk perceptions influence the likelihood of an Internet user accessing their account but also the fit between normative and predictive expectation for "Risk Reduction" items.

The results of OLS regression showed task differences in expectation fit as an antecedent to task-specific risk. For the information search task "Graphics" does not make a contribution to information search risk. "Information Provision" and "Risk Reduction" are negatively related to search risk perceptions. For the account access task situation all expectation fit variables have a negative relationship with the

dependent variable, that is as factor scores increase then perceptions of task risk fall. The variable that makes the largest contribution is “Risk Reduction”.

There are specific findings of this analysis that provide support for the generalisability of findings from the wider body of literature. There is support for those studies that find that moving graphics are not valued (Joseph and Stone 2003) and that the ability to search quickly and gain access to pricing information is valued (Lynch and Ariely 2000). These results challenge the finding by Van Riel et al (2003) that find that expectations levels do not differ amongst experienced Internet users. One explanation of this difference is the distinction made in this thesis between task contexts. This exploratory analysis has developed insight into several areas and there are indications of variation in response for the presence of moving graphics, the provision of security cues when searching for information and the provision of information on competitor’s rates. The findings also indicate that the provision of information is important for both task scenarios.

There are differences between the two tasks that are of interest. For example drawing on the DoI perspective it is possible to consider information search as a low-risk activity that facilitates trial of a web site prior to adoption (Shim et al 2001, Lassar et al 2005). These findings show that there are perceptions of risk even amongst experienced Internet users and that these perceptions exist for information search activity on a bank web site. In addition, these results show that “Risk Reduction” is a factor that, for the information search task, has more instances of differences between socio-demographic groups compared to the account access task. It may be that research participants do not expect that a bank web site will meet their normative expectations when searching for information or it may indicate that research participants perceive information search to be a riskier activity.

CHAPTER 6 CONCLUSIONS AND IMPLICATIONS

6.1 Chapter Introduction

This chapter highlights the key findings and contributions of the thesis and discusses the implications. The chapter begins by summarising the contributions made by the scholarly review of the empirical and methodological literature pertinent to the enquiry. The chapter then summarises the findings and contributions of the preliminary research into online information seeking conducted in Phases 1 and 2 of the enquiry. Following this the chapter focuses on the findings and contributions of Phase 3 of the research that explored differences across the task scenarios of information search and account access. Finally in the conclusion to the thesis, the chapter provides an overview the findings in relation to the research questions, proposes several implications of the research, considers the sufficiency and limitations of the enquiry and suggests areas for further study.

6.2 Scholarly Review: Findings

6.2.1 The Research Focus

Chapter 1 informed on the background to the thesis, detailed the scope and focus of the research and provided an overview of thesis structure. The Internet was identified as a phenomenon worthy of study and a need for scholarly research into online consumer activity was outlined. There is a need for detailed research on consumer use of SSTs and this chapter presented a conceptualisation of e-service that is consistent with work by Gronroos et al (2000) and Van Riel et al 2001. It was argued that web site functionality provides consumers with tangible cues as to the nature of the service about to be provided and that consumers may use the Internet for a variety of purposes. Thus it is important that research is undertaken to pinpoint the e-support that consumers expect when using a web site to search for information.

The choice of online banking as the context of the enquiry was justified as sector of economic and social importance that has only recently emerged as a distinct field of study. The Financial Services sector is increasingly using the Internet to provide information and there is evidence that the Internet is replacing conventional sources

of consumer information (Harrison and Waite 2004). Thus it was proposed to examine consumer evaluation of a bank web site for two e-support tasks: information search and account access. This research was considered as important and relevant to practitioners in terms of developing insight to inform the development and marketing of online banking services.

6.2.2 The Research Literature

A review of the research literature in Chapter 2 generated insight through an examination of the substance of extant research and the orientation of the research activity in terms of research approach, sampling procedure and choice of analytical technique. The review adopted a two-stage approach. First it quantified online banking research according to three perspectives on new technology adoption drawn from IS literature: a Diffusion of Innovation Perspective (DoI), a User-Intention Perspective (UI) and an Expectancy-Disconfirmation (ED) Perspective. Next it examined the strengths and weaknesses of the theoretical underpinning of each research perspective and the implications for online banking research and thus contributed towards the development of the research propositions.

Findings from the quantification of the online banking literature are summarised as follows:

- The volume of sector-specific research has increased over time indicating that this is an active research area that is of interest and relevance to both academic and practitioner audiences.
- In terms of research perspective, no single research perspective has established continuing dominance within the field, however a significant proportion of studies are located within the UI Perspective and thus there is an emphasis on explaining and predicting consumer adoption.
- Quantitative data collection and analytical techniques dominate as evidenced by the large number of studies that utilise structural equation modelling (SEM) and other confirmatory techniques.

- There is reliance upon non-probability data through convenience sampling bringing into question the generality and validity of findings.

This evaluation of the research literature provides direction for research in this area. The findings help decision-making on which form of study is appropriate to the field and informs choice of data collection and analysis techniques. Evidence of ongoing academic interest in this sector indicates that this area is worthy of enquiry. The information on the extent of use of confirmatory techniques suggests that there is an over-emphasis on theory testing. Identification of an emerging trend towards inductive enquiry provides support to an exploratory research approach that is able to generate ideas and develop a richer understanding. The widespread use of quantitative techniques indicates that a consistent approach is best able to test, build upon, compare and link with a substantial body of prior research. Detail on the sample composition provides understanding of the limitations of current research and indicates that a study that gathers information from Internet users rather than bank customers could develop additional insight.

Building on the first stage of the analysis that quantified online banking research the next phase of the literature review explored each of the research perspectives in greater detail. A review of research within the DoI Perspective was reported. The DoI perspective aims to identify processes and characteristics (both of the adopter and of the innovation) that promote adoption and increase the rate of diffusion over time. This perspective has been widely-used both at an individual and organisational level. Its strengths are its multi-disciplinary nature, its pragmatism and the simplicity of its approach, whilst criticisms include its fragmented nature and post-hoc descriptive formulation.

In examining how DoI has been applied to Internet adoption it was concluded that the Internet has several characteristics from which consumers can derive relative advantage both in terms of information search and transaction activity but that risk has acted as a barrier to adoption. A review of the current literature indicates that there is a clear need for research that explores risk in specific purchase contexts and for research that isolates technology-risk and task-risk from other factors. In

addition, it was noted that there is the need for a more considered approach into the influence of attitudinal and behavioural differences on innovation adoption.

When examining the application of DoI theory to online banking adoption it was concluded that whilst consumers perceive that there are benefits to be gained from banking online, non-adopters remain unconvinced of the advantage of online banking relative to other channels. Thus, in order to understand reasons for non-adoption it is important to examine where and why online banking is failing to deliver, particularly now that penetration of online banking has increased. It was identified that research is needed in relation to online information search as an activity that informs consumers about online banking and permits low-risk trial of a bank web site. This need is highlighted when considering the link between online information search and subsequent purchase shown within Internet research.

A review of the UI Perspective was undertaken with a particular focus on the application of the Technology Acceptance Model (TAM). In examining how TAM has been applied to Internet adoption it was identified that the ordering of “perceived usefulness” and “perceived ease of use” has been shown to vary according to the degree of prior exposure and also the nature of the online task. It was concluded that as Internet research progresses, a more detailed research is needed that teases apart the subtleties of the online experience for investigation.

Finally a review of the ED Perspective was conducted. This approach aims to identify the specific design elements of an innovation that promote adoption. It is an approach that delivers detailed diagnostics of web site attributes that can assist practitioners with design decisions. The ED Perspective measures both user satisfaction and evaluations of service quality. In terms of service quality two research streams were identified in the marketing literature: SERVQUAL and The Nordic School. IS research investigation has focused on end-user satisfaction that examines system quality and information quality. It was identified that research into web site quality research is dominated by SERVQUAL. Studies have developed various scales for measuring consumer evaluations of web site attributes and the combinations of these attributes that indicate the presence of dimensions of web site quality. There are suggestions that web site attributes may be valued differently at

different stages of a transaction however there is limited research that empirically tests these ideas.

Focussing on how the ED perspective has been applied to online banking it was concluded that there is a need for research that takes a more detailed approach to web site quality investigation. In particular studies are needed that seek to isolate the attributes of the service that are unique to the online medium and the influence of task upon consumer requirements for certain web site features. In terms of research that compares consumer needs across task scenario only one study was identified (Lassar and Dandapani 2003). This study found that task condition did influence consumer perceptions of web site attributes, providing support for the conduct of this thesis.

It was concluded that there exists as yet, no comprehensive, fully validated framework for understanding or predicting consumers' online service adoption (Bobbitt and Daholkar 2001, Santos 2003). Furthermore it is debatable whether the study of Internet adoption has yet reached a stage to warrant formulating a system of generalisations governing online behaviour or that, given the range of web site activity, whether such a model is possible. There are indications of a range of factors that influence consumer attitudes towards adoption and continued use of online banking. The development of online banking research indicates that an exploratory approach has the potential to develop fresh ideas and new avenues for research whilst a confirmatory approach may prematurely limit understanding (Stebbins 2001). Thus it was proposed to conduct an exploratory study that addressed the following research needs:

- The need to adopt a finer-grained approach to e-service adoption and in particular to examine how consumer expectations of a bank web site vary according to task context.
- The need to increase understanding of the characteristics of the online banking adopter/ non-adopter whilst controlling for Internet adoption.

- The need to develop an approach to explore both user and non-user web site evaluation.
- The need to increase understanding of how the fit between normative and predictive expectations of web site attributes relates to perceptions of risk and whether these relationships change according to task context.

6.2.3 The Research Methodology

Chapter 3 addressed the thesis research issues, methods and choices. It contributed to the thesis by providing a detailed description of the path that was taken in order to advance knowledge in the research area. This methodological account informs subsequent research and facilitate systematic enquiry into online banking. The chapter presented the aims of objectives of the three phases of the thesis. Phases 1 and 2 were preliminary studies that aimed to generate a range of web site attributes relevant to online information search in the context of online banking. These attributes were used in a Phase 3 study that compared Internet user expectations across both information search and account access tasks.

The research was conducted within the scientific realist paradigm and aimed to increase and enhance knowledge through the rigorous application of appropriate techniques. It is acknowledged that it is not possible to access truth independent of subject and context and that any understanding will be contingent rather than absolute. The study combined both qualitative and quantitative phases in order to generate understanding and then to measure, describe and analyse associations between variables of interest.

6.3 Preliminary Research: Findings

Chapter 4 reported on two phases of preliminary research that were conducted to generate insight into consumers' online information seeking expectations. Focus groups were held to generate a range of normative expectations. There was a clear expectation in terms of web site functionality. Focus group participants expected that a bank web site should be quick to download and have tools to assist with ease of navigation and search efficiency (search engine, site map, online tutor).

Participants also commented on how links to other web sites, “flashy graphics” and “pop-up ads” reduced search efficiency and increased temporal risk in the context of Internet search activity. There were expectations for both pre-purchase information and on-going information on bank processes. Participants indicated that they valued up-to-date information with sufficient detail to facilitate decision making without having to visit a bank branch. However in contrast to the desire to remotely access financial services information, there was a preference amongst some group members for support by branch staff when conducting transactions or making a final decision about a financial product.

There were mixed perceptions of the risk associated with using a bank web site for information search. Participants commented on their fears of making a mistake, which is identified as a form of performance risk. There is an expectation that a bank web site should contain information on its security arrangements. Focus group discussion also indicated that there might be differences in expectations according to the level of Internet experience and product knowledge that consumers enjoyed.

There was criticism within the focus groups that banks had not properly researched consumer needs before developing a web site. In addition focus group participants discussed their hybrid shopping patterns; namely how they searched for information online and purchased offline. This provided support for conducting a finer-grained approach to the study of web site attributes that distinguishes between search and transaction activity. Thus the focus group discussion indicated that there might be differences in normative expectations according to whether the purpose of the online visit was for information seeking or account access and that there might be a gap between predictive and normative expectations of bank web site information.

The Phase 2 study used the findings from Phase 1 as a foundation to quantify and explore consumer expectations of a bank web site in the context of information search. The Phase 2 research provided support for the Phase 1 findings. A ranking of mean expectation scores showed that participants valued attributes such ease of use and targeted information on service pricing and processes. There was also evidence that not all interactivity is good in the eyes of the consumer and indication that consumers value some components of interactivity and not others.

Exploratory Factor analysis provided evidence that normative expectations for online information search could be grouped into meaningful dimensions. Seven factors were identified that related to information provision (what is provided), the way that web site functionality (how it is provided) and the characteristics of the financial services organisation, such as responsiveness and geographical spread (who is providing). A comparison of these dimensions with extant research indicated areas of congruence and contrast. For example, the prominence given to information on retail banking processes is consistent with previous research. However, no other online banking study was located that identifies the presence of search tools as a distinct factor.

Further exploration indicated that there were differences according to Internet activity, experience and frequency of use and provided evidence that web site satisfaction is linked to high familiarity with the medium. Hence the ability to derive information that is useful from the Internet may depend on the ability of the user in operating search engines and other search tools. Thus the Phase 2 indicated that search interface design is particularly challenging in a public access environment because customers will come to the interface with a wide range of different experiences. These insights provided support for a Phase 3 study that utilised a more diverse sample. Thus the preliminary studies assisted in the generation of consumer based evaluative criteria for a bank web site as an information source.

6.4 Main Research: Findings

The main research phase addressed a need for research that adopts a finer-grained approach to the investigation of e-service and increases understanding of the influence of task context on web site evaluation. It examined and compared normative expectations for web site attributes according to task. Overall the results indicate that there are statistically significant differences between task scenarios and that normative expectation reflects the task that is under consideration. However, in terms of the dimensions of expectation fit, there are several points of similarity between the task conditions. For example, there is evidence that Internet users place value on information attributes in the context of account access.

The Phase 3 findings strengthen and provide support for extant studies. For example the results are congruent with research by Joseph and Stone (2003) who find that moving graphics are not valued. Findings are also consistent with Lynch and Ariely (2000) who report that the ability to search quickly and gain access to pricing information is valued. In contrast, the Phase 3 findings challenge the results reported by Van Riel et al (2003) that expectation levels do not differ amongst experienced Internet users.

The exploratory approach adopted by this thesis develops insight that there is variation in response amongst participants for: the presence of moving graphics, the provision of security cues when searching for information and the provision of information on competitor's rates. The findings also indicate that the provision of information is important for both task scenarios.

An exploration of response according to Internet access, experience and ability was undertaken, indicating that differences are present. Results show that those individuals who are less technologically confident or who are less familiar with the Internet anticipate that there will not be sufficient "Risk Reduction" measures in place when searching for information on a bank web site. This finding may reflect either a participant's limited Internet experience or heightened perceptions of risk.

Those without a broadband connection also perceive under-provision of "Risk Reduction" measures. Those without broadband also considered that "Graphics" were under-provided compared to those with broadband whose expectations were met. This might reflect the cost and time that a dial-up connection takes; hence any graphics are viewed as over-provided since they may take a long time to download.

Phase 3 results also indicated areas of task difference. Participants perceive information search as a riskier activity. There are gaps between normative expectations and predictive expectation. Results show that "Risk Reduction" is a factor that, for the information search task, has more instances of differences between socio-demographic groups compared to the account access task. In a multivariate model, that examined the role of risk and expectation fit on intention, it was found that risk has a statistically significant influence on intention for both task

scenarios. In terms of information search, task-specific risk is the only variable identified as influencing intention and no expectation fit score has a direct relationship. For account access, risk and expectation fit for “Risk Reduction” influence task-specific intention indicating that “Risk Reduction” expectation fit has a direct relationship with intention to undertake this task. Thus, both risk perception and expectation fit for “Risk Reduction” items influence the likelihood of an Internet user accessing their account online.

There are differences in the relationship between expectation fit and task-specific risk. The results of OLS regression showed that for the information search task “Graphics” does not make a contribution to information search risk. “Information Provision” and “Risk Reduction” are negatively related to search-risk perceptions. This indicates that as scores increase then risk perceptions decrease. An increase in the scores would represent expectation matching or exceeding prediction.

For the account access task situation all expectation fit variables make a statistically significant contribution to the account access risk variable. All variables have a negative relationship with the dependent variable, thus as factor scores increase then perceptions of task risk fall. Examination of standardised beta weights shows that the variable that makes the largest contribution is “Risk Reduction”. There is evidence of a non-linear relationship between “Risk Reduction” and account access risk, in that as soon as normative expectations are exceeded then risk perceptions begin to rise. There is scope for further exploration of this finding in subsequent research.

6.4 Thesis: Contribution

This thesis makes the following contributions to the field of study.

- It provides a critical review of the literature (Chapter 2) using a framework that integrates concepts drawn from Information Systems (IS) research. This meets the need for research outlined by Lin (2007: 364) who argues that “the integration of IS and marketing views should be of critical importance ...in the B2C e-commerce context”. This framework provides a systematic overview of online banking research and highlights where future research may be directed to advance knowledge in this area.
- It provides a justification for a more considered approach for Internet research and details a methodology that takes into account different levels of prior experience through the use of expectation levels. Chapter 3 contains a methodological account that can be used to inform subsequent research and facilitate systematic enquiry into online banking.
- It generates insight into consumer online information seeking expectations in the context of online banking and provides evidence that expectations vary according to task scenario (Chapters 4 and 5). This provides support for the concept of Task Technology Fit (Goodhue and Thompson 1995). This theory proposes that the degree of anticipated fit between technology features and task requirement influences pre-adoption beliefs and attitude. These findings also provide evidence in support of Bauer et al (2006) and Prescott and Van Slyke (1997) who argue for a richer diagnostic approach to web site evaluation.
- It finds that there are differences in response for information seeking and account access task scenarios in terms of the influence of socio-demographic characteristics and the relationship between expectation levels, task-risk and task intention (Chapter 5). This exploratory analysis can be used to inform subsequent research into consumer use of a bank web site for e-support.

6.6 Thesis: Implications and Limitations

6.6.1. Theoretical/Academic Implications

There are conceptual and methodological implications for these results. There are implications for studies into online banking that use both the ED and DoI research perspectives. First, the findings indicate that there are implications for study design when applying SERVQUAL in an online context. The central role of expectations within the ED research perspective and its dominance within online banking research means that it is important for researchers and practitioners to pinpoint the nature of the expectation that has been formed. Researchers using the ED approach should be aware that failure to specify a web site task might influence their results (Waite 2006).

Second, there are also implications of these results for research drawing on the DoI research perspective. The DoI perspective provides a post-hoc explanation of the factors that contribute towards innovation success. Several studies have focused on utilising individual characteristics in explaining online banking patterns but have not specified the tasks that respondents undertake. The results of this thesis indicate that there are differences in the influence of socio-demographic and behavioural variables according to task condition. Thus, researchers following the DoI perspective should gather more detailed information of online activity.

The research presented in this thesis has implications for research conducted into e-service and particularly those studies that focus on e-support. This research has developed and elaborated on those web site features that individuals value for information search in the context of online banking. The findings from the analysis presented here add greater depth to this area of study and have consolidated understanding in this area. A finding of interest is the value placed by consumers on ongoing information search in the context of service consumption. This suggests that information provision may have a role as an experience attribute during the provision of a long-term service (Ennew and Binks 1996, Stock and Lambert 2001, Waite and Harrison 2004). Thus researchers who are undertaking research into web sites

associated with services of this nature should take into account the importance of information search as an online activity.

Finally in terms of online banking research, this study has explored in detail a sample of experienced Internet users and has reported on differences amongst this group of participants. Within the IS discipline it has been recognised that research is needed that investigates the behaviour of adopters and continuing users as a group worthy of study (Bhattacharjee 2001) yet to date few online banking studies have purposively focused on this group. The findings here indicate that this is a group worthy of interest and the methodology presented enables future research to build on the exploratory study undertaken in this thesis. In addition, differences between participant responses according to educational attainment have implications for those studies that have used undergraduate and post-graduate student samples. Hence, care should be taken in the reporting of results of such studies that use participants from these groups.

6.6.2 Practical Implications

An increase in understanding of how expectations vary across task may enable marketing practitioners to appropriately “manage” expectations in order to facilitate a positive response (Peters 1998). This research indicates that consumers value the provision of information that facilitates their on-going search activity. Thus, in terms of practice, banks may wish to examine the nature of the online information provided once consumers have accessed their accounts. There are reports that online graphics are unpopular amongst Internet users. These findings indicate that those who have lower educational attainment value the provision of graphics when searching for information. Thus banks might like to consider the needs of this market segment when formulating their web site design.

A second implication of this research is that unmet normative expectations for risk-reduction measures are linked to less likelihood to use a bank’s web site for information search or account access amongst regular and active Internet users. Researchers have repeatedly found that risk is a barrier to adoption of online banking (see for example, Black et al 2001, Gerrard and Cunningham 2003, Lee et al 2005).

For example, Curran and Meuter (2005: 36) warn that perceptions that online banking is “risky” are a “discouraging prospect for banks” that requires attention. Whilst account access might be termed a risky activity, it has been argued that online information search is a divisible low-risk activity that is an important initial stage before full adoption (Shim et al 2001). However this research finds that participants consider using their bank’s web site for information search to be a riskier activity than account access and thus banks should consider measures to reduce these perceptions.

6.6.3. Limitations

A number of limitations to the research design used in this study should be noted and considered when formulating future research. First this research design is cross-sectional and thus presents a “static account” that fails to capture the complexity of consumer behaviour (Bryman 1988:101). Data on variables was simultaneously collected so that it is not possible to establish a time order of the variables in question.

Second the research purposively uses an Internet sample and thus the results cannot be generalised to the wider population. Data was collected using an online survey and a permission-based list. This may have resulted in those responding have distinct characteristics. For example, individuals in an online sample may be more extrovert and outgoing than those who respond using alternative methods (Schillewaert and Meulesmeester 2005). In addition, online respondents may also be “more politically active, more likely to be earlier adopters of technology, and tend to travel and eat out more than face-to-face respondents” (Duffy et al 2005: 620). Thus results might be influenced by the data collection method employed.

However it can be argued that problems of bias are not confined solely to online methods. For example, Schillewaert and Meulemeester (2005) note that issues of coverage and bias are pertinent for other modes of data collection, since self-selection bias is true to some extent for all survey methods. They state that the trend towards mobile phone ownership has resulted in random digit dialling decreasing in adequacy for probability sampling. They conclude that “consequently, purely

random samples are very hard to draw and researchers *always* need to be careful with the generalisability of results [original italics] (Schillewaert and Meulemeester 2005: 165).

There are arguments that the achieved samples in online surveys are more representative than traditional approaches. For example, online data collection reaches young male, busy professionals who “often repel or ignore cold callers but are willing to answer questions posted on their computer screen” (Kellner 2004 cited in Duffy et al 2005: 618). Schillewaert and Meulemeester (2005) argue that for online populations of interest online data collection can generate representative results. However, contrary to this Birnbaum (2004: 820) argues that:

“It would be a mistake to treat data recruited from the Web as if they represented a sample of some stable population of “Web users”. The list of people with access to the Internet is expanding every day, and no method yet devised has been shown to reach those users in a random fashion”.

Third due to time and resource limitations several data collection techniques that have been shown to reduce bias were not implemented. For example, there was no follow-up request to non-respondents to participate in the survey (Chisnall 2001). In addition, automated prompts to encourage participants to complete items were not implemented (Best and Kreuger 2004). Although online surveys facilitate randomisation of items within scale batteries and randomisation of scale direction these techniques were not employed. Finally due to researcher error the mechanism to time and date stamp replies was not activated and therefore only a manual check of response waves was possible.

This thesis is based on a cross-sectional study within a field that is fast moving. Schibrowsky et al (2007: 726) note that “nearly 40 percent of all internet marketing research has been published in the last two years. For researchers, this provides a number of opportunities but requires a constant updating of their knowledge of the Internet literature”. Orlikowski and Iacono (2001: 131) argue for more longitudinal study since:

“IT artifacts are not static or unchanging but dynamic. Even after a technological artifact appears to be fixed and complete, its stability is conditional because new materials are invented, different features are developed, existing functions fail and are corrected, new standards are set, and users adapt the artifact for new and different uses.”

However it is proposed that the insight and methodological approach used in this enquiry could inform subsequent longitudinal research.

In terms of the research variables, this thesis has only examined a selection of the variables that relate to online behaviour. Goodhue and Thompson (1995) note that it is difficult to test a large model in a single study and therefore elect to test only core components. Thus the thesis focused on the impact of expectation fit on risk perceptions and task intention. Furthermore it only examined intention and not actual behaviours. Sheppard et al (1988) write that “an intention measure may not provide a good prediction of goal attainment as it is determined not only by intention but also by a variety of other factors”. Thus it is not possible to examine outcomes of differences in expectation fit.

Finally, this thesis asked consumers to consider a scenario (seeking for financial information over the Internet) that may not have been familiar or important to them. Thus, they were responding to an imaginary task rather than their real information seeking behaviour. However, imaginary tasks have long been used in psychology and are becoming more common in marketing and consumer behaviour research (Bitner 1990, Swinyard 1993, Kline and Wagner 1994)

6.6.3 Areas for Further Study

The results of this thesis facilitate further research into the influence of task context on consumer online behaviour. For example, the current study focused on online banking and did not examine how expectations might vary across different financial products or different industry sectors. A current account is considered a simple and foundational financial services product (Ennew and Waite 2007). Therefore it will be of interest to see how expectations may vary according to the complexity of the service or product under consideration. In addition it will be of interest to see if the

results of this study are replicated for other service sector or non-profit and government web sites.

The participants in this study were all drawn from the UK population. There is emerging evidence that cultural orientation influences web site quality expectations however research in this area remains limited (Tsiriktsis 2002). Therefore it will be of interest to see if research, that utilises international samples of participants, validates or contradicts the results reported here.

There is scope for further study that can provide valuable insight into the process by which predictive and normative web site expectations are formed. It will be of interest to investigate the antecedents to web site expectations drawing upon the work of Devlin et al (2002). In addition research might examine whether antecedents to expectation differ according to socio-demographic characteristics such as gender and age as well as attitudinal characteristics such as product or channel involvement and risk perceptions. There is also scope for longitudinal research that examines how expectations change over time.

This study has focused on a discrete set of web site attributes and only two online task scenarios. There is scope to continue work using a wider range of web site features and other online task scenarios. Page-Thomas (2006: 470) writes that “understanding why people accept or reject electronic technology has proven to be one of the most challenging issues in information systems research” and calls for ongoing research to address this issue. This study has been exploratory in nature and there is scope to extend the web site items under consideration and to attempt to confirm the underlying evaluative factors identified in this research. There is also scope to utilise additional data to investigate the non-linear effects of measures of risk reduction.

Finally, it will be of interest to conduct future research that explores the individual differences between consumers in greater detail. The data in the current research suggests that expectation differs according to specific socio-demographic characteristics such as educational attainment and gender. It will be of interest to conduct studies that focus on distinct sub-groups within the population. Future work

might utilise qualitative data to gain additional insight into the quantitative findings presented here since the literature review of online banking studies in Chapter 2 identified that qualitative work in this area is under-developed.

6.7 Chapter Conclusion

To conclude this thesis has identified differences and points of similarity across task condition. It has found that the use of different levels of consumer expectation is of use in this context and provides results that increase understanding of consumer online behaviour. Specifically in the context of online banking it has shown that there are differences according to expectations of a bank web site for information search and account access and has provided insight that when consumers access their bank web site they have expectations of information that may support their ongoing information search activity.

APPENDICES

Appendix I Overview of Online Banking Studies Using TAM

Study	Sample	Predictive Ability (R ²)	Perceived Usefulness (U)	Perceived Ease of Use (EoU)	Attitude To Use (Att)	Intention to Adopt (Int)	Actual Use (Y/N)	External Variables	Additional Belief Factors	Factors from Related Models
Chau & Lai 2003	Convenience sample of 167 Students	Att = 55%	U → Att	EoU → U EoU → Att	Y	N	N	Task Familiarity → U Alliance Services → U	Accessibility → EoU Personalisation → U	N
Cheng et al 2006	Random sample 212 Business Bankers	Not given	U → Att U → Int	EoU → U	Att → Int	Y	N	N	Security → Int	N
Eriksson et al 2005	Stratified random sample of 1831 online bankers	Not given	U → Use	EoU → Use	N	N	Y	N	Trust → U Trust → EoU	N
Guriting & Ndubisi 2006	Branch intercept 133 internet users	Use = 44%	U → Int	EoU → Int	N	Y	N	Computing Experience NS	N	Computer Self-Efficacy → U Computer Self-Efficacy → E-U
Hernandez & Mazzon 2007	Branch intercept 150 online bankers 150 non-internet users	Int = 60%	N	EoU - NS	N	Y	Y	Home PC NS Education → Int Age NS Gender NS Income NS	Relative Advantage → Int Visibility NS Result Demonstrability → Int Compatibility → Int Triability → Int Image → Int	Subjective Norm → Int Perceived Behavioural Control → Int
Jahangir & Begum 2008	No sample information given 227 online bankers	Not given	U → Att U → Use	EoU → Att EoU → Use	Att → Use	N	Y	N	Security → Att Security → Use	N
Lai & Li 2005	Convenience sample of 247 Students	Not given	U → Att U → Int	EoU → U EoU → Att	Att → Int	Y	N	N	N	N

Study	Sample	Predictive Ability (R ²)	Perceived Usefulness (U)	Perceived Ease of Use (EoU)	Attitude To Use (Att)	Intention to Adopt (Int)	Actual Use (Y/N)	External Variables	Additional Belief Factors	Factors from Related Models
Mckechnie et al 2006	Stratified random sample 150 online bankers, 150 telephone bankers	Use=40%	U→ Positive Emotions U→ Insecurity Emotions U→ Use	EoU→U EoU→ Positive Emotions EoU→ Insecurity Emotions	N	N	Y	Age→ NS Gender→ NS Income→ NS Purchase Experience→ EoU Purchase Experience→ U Purchase Experience→ Insecurity Emotions Purchase Experience→ Use Home internet → EoU Work internet NS Product involvement→ EoU	Positive Emotions→ Use Insecurity Emotions - NS	N
Ndubisi 2007	Branch intercept 133 internet users	Int = 46%	U→ Int	EoU→Int	N	Y	N	N	Reliability NS	Computer Self-Efficacy interacts with U and EoU
Pikkarainen et al 2004	Convenience sample of 268 adults	Use=12%	U →Use	N	N	N	Y	Age - NS Gender - NS Income →Use Information →Use	Enjoyment - NS Security -NS	N
Suh & Han 2002	Convenience sample of 845 online bankers	Att= 65% Int = 75% Use = 3%	U→ Att U→ Int U →Trust	EoU→U EoU→ Att	Att→ Int	Int →Use	Y	N	Trust → Att Trust → Int	N

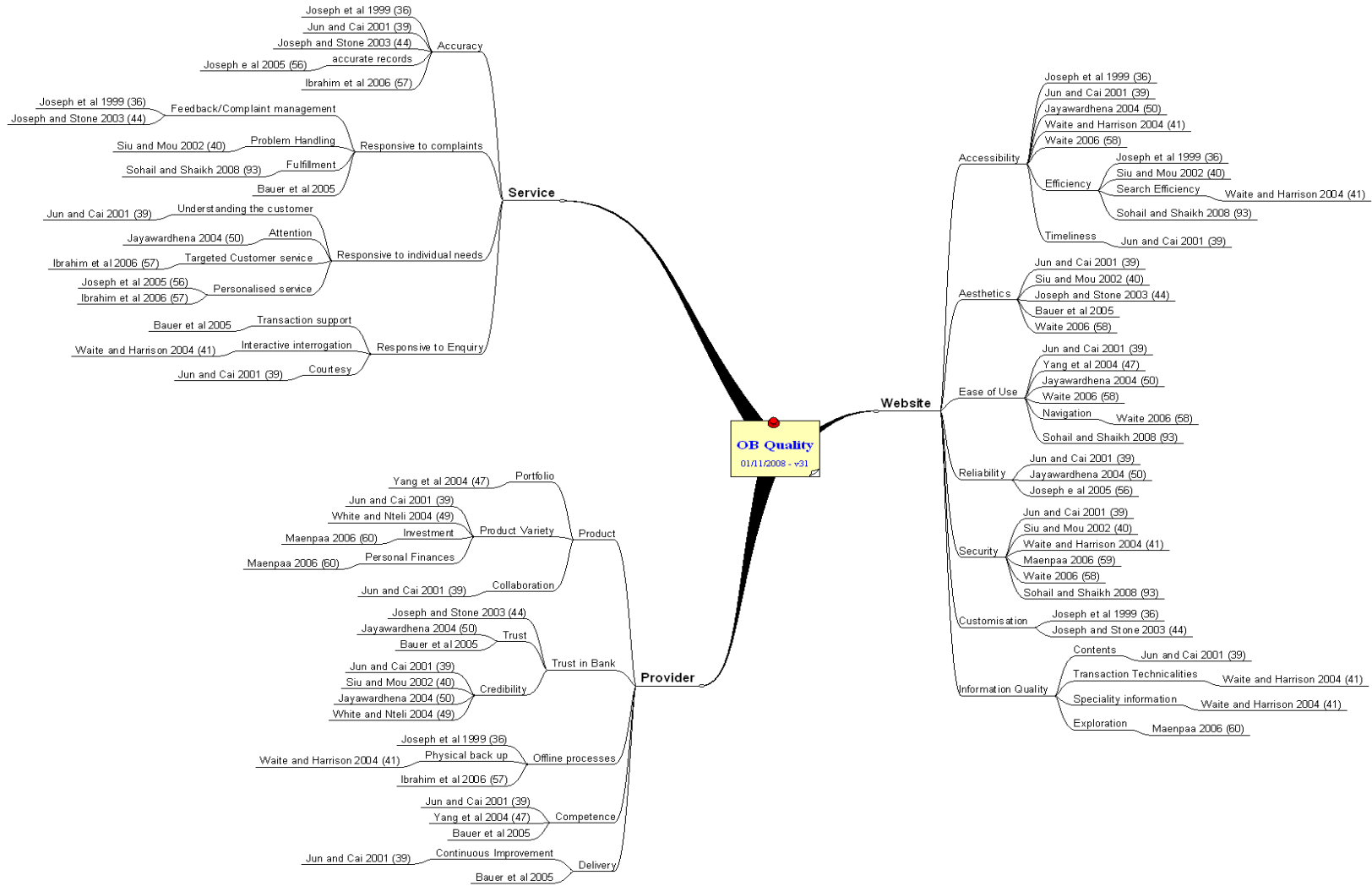
Study	Sample	Predictive Ability (R ²)	Perceived Usefulness (U)	Perceived Ease of Use (EoU)	Attitude To Use (Att)	Intention to Adopt (Int)	Actual Use (Y/N)	External Variables	Additional Belief Factors	Factors from Related Models
Sukkar & Hasan 2005	Convenience sample 52 students	Not given	U → Att	EoU → Att	Att → Int	Y	N	Culture → EoU Culture → U Feedback → EoU Feedback → U	Trust in bank → U Trust in bank → EoU Trust in channel → U Trust in channel → EoU Convenience → EoU Convenience → U Efficiency → EoU Efficiency → U Security → EoU	N
Sundarraj & Wu 2005	Convenience sample 99 students	Use = 12%	U → Use	EoU → U EoU → Use	N	N	Y	N	N	N
Wang et al 2003	Convenience sample of 123 Bank customers	Int = 62%	U → Int	EoU → U EoU → Int EoU → Credibility	N	Y	N	N	Credibility → Int	Computer Self-Efficacy → U Computer Self-Efficacy → E-U Computer Self-Efficacy → Credibility
Yiu et al 2007	Random sample 150 PC holders	Not given	U → Use	EoU → Use	N	N	Y	Gender → Use Age → Use Education → Use Income → Use Personal Innovativeness → Use	Risk → Use	N

Appendix II Selected Online Banking SERVQUAL Studies

Date	Author	Sample	Dimensions
2005	Bauer et al	Self-select 280 online bankers Germany	6 Dimensions Security and Trust Basic services quality Cross-buying services quality Added value Transaction support Responsiveness
2006	Ibrahim et al	Random Sample 135- Bank Customers UK	7 Dimensions: Convenience/Accuracy, Accessibility/Reliability, Good queue management, Personalisation, Friendly/Responsive service, Targeted customer service, Undefined.
2004	Jayawardhena	List-based 426 Online bankers UK	5 Dimensions Access Web interface Trust Attention Credibility
2003	Joseph and Stone	Intercept - Mall 175 Online bankers	8 Dimensions Accuracy Security Accessibility Convenience Confidence in bank Ability to handle complaints Personalised to my needs Visual Appearance
1999	Joseph et al	Intercept- Mall 300 e-bankers Australia	6 Dimensions: Convenience/Accuracy Feedback/Complaint management Efficiency Queue Management Accessibility Customisation
2005b	Joseph et al	Intercept- Mall 175 Bank customers US 198 Bank customers UK US and UK	4 Dimensions Reliable and accurate banking services Customer service Personalised service Accurate records
2001	Jun and Cai	US online discussion forum 704 comments US	17 Dimensions Banking Product Quality Product variety/diverse features Customer Service Quality Reliability Responsiveness Competence Courtesy Credibility Access Communication Understanding the customer Collaboration Continuous improvement Online Systems Quality Contents Accuracy Ease of use Timeliness Aesthetics Security

2006	Maenpaa	Quota 300 Online Bankers Finland	7 Dimensions Convenience Security Status Auxiliary Features Personal Finances Investment Exploration
2002	Siu and Mou	Intercept – outside retail banks 195- Online Bankers Hong Kong	4 Dimensions: Credibility Efficiency Problem handling Security
2008	Sohail and Shaikh	Convenience Snowball 260 Online bankers Saudi Arabia	3 Dimensions Efficiency and Security Fulfilment Responsiveness
2006	Waite	Convenience 160 Population UK	5 Dimensions Access Usability Navigation Aesthetics Security
2002	Waite and Harrison	Convenience 253 Students UK	7 Dimensions: Transaction technicalities Decision making convenience Interactive interrogation Speciality information Search efficiency Physical back-up Technology thrill
2004	White and Nteli	Convenience 56 Online Bankers UK	5 Dimensions Responsiveness Credibility Security Ease of use Product variety
2004	Yang et al	9 consumer websites 235 Online Bankers	6 Dimensions: Reliability Competence Responsiveness Ease of use Security Product portfolio

Appendix III SERVQUAL Themes



Appendix IV Phase 1: Focus Group Topic Guide

Introduction

Explanation of what is focus group participation

Purpose of the focus group and aim of the research explained i.e. online information seeking behaviour.

Confidentiality assurances and permission to record

Warm/Up

Please tell me your name and outline how you use the Internet to look for information

Probe for most regular type of information sought, extent of use, when and where Internet is used.

Advantages of using the Internet

Based on your Internet experiences what do you think are the advantages of using the Internet as an information source?

Develop any themes that emerge related to accessibility, interactivity, information quality, speed, cost savings.

Disadvantages

Based on your Internet experiences what do you think are the disadvantages of using the Internet as an information source?

Develop any themes that emerge related to with regards inaccessibility, loss of personal contact, cost, poor, information quality, lack of speed.

Excellence

Imagine that your bank is planning to design a web site to provide consumer information. What advice would you give your bank to help it make its web site an excellent site?

Closure

Thank you for taking part. Outline briefly what the next stage of the research will be. Provide researcher contact details if there are any questions and concerns and ask participants to sign an informed consent form.

Appendix V Phase 1: Focus Group Coding

1. Open Code	2. Axial Code	3. Selective Code
Price comparison, Information to become informed	Information search outcome	Positive Internet Search Experience
Queue avoidance, Available at any time, Available at any place	Time saving	
Credibility, Dated, advertising, Impersonal	Information Dissatisfaction	Negative Internet Search Experience
Image building	Suspicion	
Unable to speak to a human	Need for personal contact	
Being trapped on a web page. Pop-Up ads	Risk	
Inadequate time to reflect, Too much information, Need to re-start search,	Processing difficulty	
Flashy, Pop-up graphics, Cost of use	Web Advertising	
Forced to supply personal details , Receiving junk e-mail , Invasion	Privacy/ Security	
Ignoring, Skill, Multiple online identities	Coping behaviour	Features of an Excellent Bank Web Site.
Online tutoring, Search engine, Easy navigation, Site map, Menu, Security features, No moving graphics, Speed	System Attributes	
High street branches, Telephone banking, Range of products, Responsiveness to needs, Concern for older people	Provider/Service Attributes	
Accuracy, Information on overdraft charges, Interest rates , Competitor comparison, Foreign exchange rates, Links to other sites, E-mail, F2F questions, FAQ questions page	Information Items	Banking Behaviour
Operation mechanics, Ability to try out	Online Banking Behaviour	
Loyalty to bank , Service, Involvement, Lack of financial knowledge, Confidence	Offline Banking Behaviour	

Appendix VI Overview of Data Analysis Techniques

This Appendix provides a background to the analysis techniques used in Phases 2 and 3 of the research. The research used ANOVA, Factor Analysis, OLS regression and Logistic Regression. These techniques are each cases of the general linear model (as defined by Nelder and Wedderburn 1972). This model extends standard linear regression techniques to models with responses that violate the assumptions of a normally distributed regressor (Cohen et al 2003). This Appendix presents: an overview of each technique, details the options that were considered and outlines the data requirements underpinning each technique.

Overview of Analysis of Variance (ANOVA)

Univariate ANOVA were carried out to explore how means varied according to three or more conditions or groups (Hair et al 1998). An ANOVA explores whether three or more means are the same. An alternative approach would be to use multiple t-tests. However repeated testing increases the risk of a Type I error (a significant result when there is none) and a single test reduces this risk (Field 2007, Hair et al 1998).

An univariate ANOVA derives an F statistic that compares the amount of systematic variance in the data to the amount of unsystematic variance (Field 2007). However, a disadvantage of using an omnibus test, such as ANOVA, is that it does not determine precisely where means differ (Field 2007). Therefore it is necessary to conduct post-hoc t-tests.

The F ratio is the ratio between the mean sum of squares and the residual mean squares. The model mean sum of squares is the standardised difference between the grand mean and the mean of each condition or group (Field 2007). The residual mean squares is the standardised amount of variation explained by group membership (Field 2007).

The critical value of the F statistic is determined by two separate measures of degrees of freedom. The first measure is the degrees of freedom for the model mean sum of squares (which is the $k - 1$, where k = number of groups or conditions). The second

measure is the degrees of freedom for the residual (which is the degrees of freedom for the within participant sum of squares i.e. $n-1$ where n is the number of participants minus the degrees of freedom for the model).

If the F statistic is found to be statistically significant then it is necessary to conduct repeated t-test to pinpoint where there is a difference in means. Planned contrasts can be undertaken where specific hypotheses have been formulated to be tested. However, where research is exploratory post-hoc t-tests are undertaken (Hair et al 1998). Repeated pairwise comparisons introduce the risk of committing a Type I error. However, it is possible to adjust the alpha level using a Bonferroni correction (Tabachnick and Fidell 2007).

This approach divides p by the number of comparisons to be conducted. However, any increase in the alpha level results in a decrease of the statistical power (or beta level) of a test and increases the risk of making a Type II error (finding a non-significant result when in fact a difference exists) (Cohen 1988). Thus, when using a Bonferroni correction, it is important to note the power of the test before accepting a statistically non-significant result (Field 2007).

Data Requirements

ANOVA is deemed reliable when data is drawn from a normally distributed population, when the variances for each treatment condition are similar and when the data is measured on an interval scale (Field 2007). However, the F-test in ANOVA is robust to moderate departures from these assumptions (Hair et al 1998). Levene's test statistic tests the hypothesis that the variances of each group are equal and a non-significant result is desired. Where this assumption is violated it is possible to use the Welch F statistic that makes adjustments to F and the residual degrees of freedom (Field 2007).

Overview of Factor Analysis

Exploratory factor analysis was used to determine the risk scale unidimensionality and any latent structure within the expectation variables. Exploratory factor approach "seeks to describe and summarise a data by grouping together variables that are

correlated” (Tabachnick and Fidell 2007:609). It is an appropriate test of scale dimensionality and response pattern where the researcher does not have any a-priori hypotheses for data structure (Hair et al 1998). When conducting any form of factor analysis (confirmatory or exploratory), the researcher needs to decide upon the appropriate technique variant. These decision points are: the method of factor extraction, the criteria used to determine the number of factors to extract and the method of factor rotation.

Factor Extraction

Two of the most widely-used methods are principal components analysis (PCA) and principal factors analysis (PFA) (Hair et al 1998, Bryman and Cramer 2001, Tabachnick and Fidell 2007). PCA “considers the total variance and derives factors that contain small proportions of unique variance and in some instances, error variance” whilst PFA considers only “shared, or common, variance among the variables” (Hair et al 1998:102). Thus, PCA analyses variance and PFA analyses covariance. When PCA is used factors are uncorrelated; however, since it includes error variance PCA can produce inflated values of variance accounted for by the components (Gorsuch 1997, McArdle 1990). In contrast, PFA only analyses shared variance and so reduces inflation of the estimates of explained variance (Costello and Osborne 2005). Table 1 summarises the main points of comparison between these techniques.

TABLE 1 Comparison Between Extraction Techniques

Technique	PCA	PFA
Use	Used to summarise the variance in a minimum number of factors for prediction purposes.	Used to identify underlying factors or dimensions that reflect what the variables have in common
Assumptions	Assumes that the variable has been measured reliably and without error	Assumes little knowledge about the specific and error variance
Factor Solution	Results in a unique mathematical solution	No single unique solution (but differences are not substantial) resulting in factor indeterminacy and several factors scores possible for individual respondents

Adapted from Hair et al (1998), Bryman and Cramer (2001), Tabachnick and Fidell (2007).

In this study factor analysis is used to explore dimensionality of items and to reduce data for prediction purposes. Thus this study used PCA as the initial extraction technique. PCA is the most commonly used for scale development and produces a unique solution that will facilitate subsequent regression analysis (Velicer and Jackson 1990, Pallant 2001). In practice both extraction techniques deliver similar results (Hair et al 1998). Any “discrepancies [between solutions] are rarely, if ever, of any practical importance in subsequent interpretations” (Velicer and Jackson 1990:5). In addition, in the exploratory phase of a study researchers often utilise various techniques until “the solution and rotation produces the solution with the greatest scientific utility, consistency and meaning” (Tabachnick and Fidell 2007).

Number of Factors to Extract

If there is theoretical support then the researcher can specify a-priori the number of factors for extraction, otherwise extraction criteria needs to be set. Under-extraction of factors can obscure the true structure of the constructs. However, over-extraction can lead to interpretation problems and lack of parsimony (Hair et al 1998). One approach to factor extraction is to set a minimum eigenvalue that qualifies a factor for extraction. An eigenvalue measures the amount of total variance explained by that factor (Hair et al 1998). Thus, by retaining large eigenvalues substantive and meaningful factors are identified and retained (Pallant 2001, Blaikie 2003).

The Kaiser criterion selects those factors that have eigenvalues greater than 1, although Blaikie (2003) recommends values as low as 0.70. In addition, a variable with a low squared multiple correlation with all other variables and low correlation with all important factors (less than .30) is an outlier among variables; and is usually ignored or supplemented with other variables in subsequent research (Tabachnick and Fidell 2007). It is possible to analyse either the correlation matrix or the covariance matrix. The correlation matrix was used in this study. The correlation matrix standardises any differences in measurement scale and also addresses any problem when variables that use the scale have different variances (Field 2007).

Sole reliance on Kaiser’s criterion can result in over-extraction and it is recommended that this measure is supplemented by Cattell’s scree test (Cattell 1966,

Costello and Osborne 2005). This test involves plotting the eigenvalues (vertical axis) against each factor (horizontal axis) to provide a visual indication of how the factors contribute towards the final solution. The number of data points above the break point, at which the slope of the downward curve starts to become horizontal, is where subsequent factors may be considered for rejection (Costello and Osborne 2005). This study uses a combination of the Kaiser Criterion and the Catell Scree test for initial extraction; and factors above .70 are also considered for inclusion if this improves interpretation.

Method of Rotation

Rotation is used to simplify and clarify the data structure by maximising high correlation between factors and variables (Tabachnick and Fidell 2007, Costello and Osborne 2005). The two main approaches to rotation are oblique and orthogonal. The techniques are distinct but they often result in similar solutions; particularly when the pattern amongst the items is clear or the factors are truly uncorrelated (Costello and Osborne 2005).

Oblique rotation allows for factors to be correlated and can be more difficult to analyse and, thus, “conventional wisdom advises researchers to use orthogonal rotation” (Costello and Osborne 2005:3). Orthogonal rotation assumes that the underlying constructs are independent (not correlated with each other) and are characterised as being easier to interpret and report (Tabachnick and Fidell 1996, Costello and Osborne 2005). A variant of orthogonal rotation, and the most commonly used rotation, is Varimax for which the variance in loadings is maximised through increasing high scores and decreasing low scores (Tabachnick and Fidell 2007). This study used Varimax orthogonal rotation where more than one factor was extracted.

Data Requirements

Factor analysis is only appropriate if there is sufficient sample size. A sufficient sample has been described as, that which has: more participants than variables, no fewer than 100 cases per analysis and a minimum ratio of 5 cases to one variable (Gorsuch 1983, Hair et al 1998). Tabachnick and Fidell (2007) advise that data

should be measured on an interval scale and that variable scores should have adequate variation; in addition to being moderately, but not strongly, correlated. Hair et al (1998) outline four tests to assess the suitability of the data:

- 1) Visual inspection of the correlation matrix to check that there is sufficient multicollinearity to indicate the presence of relationships between variables. Hair et al (1998) suggest that a substantial number of variables should have a correlation of .30 or more to justify the application of factor analysis.
- 2) Visual inspection of the anti-image correlation matrix to check that there is small partial correlation. Large partial correlation would indicate that any variation between variables is explained in solely in terms of each variable, when the effects of other variables are taken into account, and not by factors.
- 3) Computation of Bartlett's Test of Sphericity to test the null hypothesis that the correlation matrix is proportional to an identity matrix (Field 2007). This process tests whether the group variances are the same and whether there is zero correlation between regressed variables. A statistically significant result is desired (Bartlett 1950). However, this test is sensitive to sample size and is most appropriately used when there are fewer than 5 cases per variable (Tabachnick and Fidell 2007).
- 4) Computation of the Kaiser-Meyer-Olkin measure of sampling adequacy (Kaiser 1970) to counter the limitations of Bartlett's Test of Sphericity. This represents "the ratio of the squared correlation between variables to the squared partial correlation between variables" (Field 2007:640). The statistic varies between 0 and 1 and can be interpreted as: .90 or above, superb; .80 or above great; .70 or above good; .60 or above mediocre; .50 or above acceptable; below .50 unacceptable (Field 2007).

Overview of Regression

This study uses regression analysis to assess the relationship between one or several variables that are the regressors for a regressed variable (Tabachnick and Fidell 2007). Ordinary least squares (OLS) regression was used to assess the extent to

which the factor scores for expectation differences were related to perceptions of task specific risk.

OLS regression is one process whereby data is summarised using a linear model, in its simplest univariate form this will be a straight line (Field 2007). The model that best describes the data is identified as, the one that minimises the differences between the observed data and the data predicted by the model. Since differences will be both positive and negative they are squared and the line that has lowest value for the sum of squared differences is the model that is selected for further evaluation. Thus this method of regression is known as the ordinary least squares approach (OLS) (Cohen et al 2003).

Problems of nonsensical prediction and inefficient estimation are associated with using OLS regression to account for a regressed dichotomous variable (Pampel 2000). Logistic regression is a “form of regression that is formulated to predict and explain a binary (two-group) categorical variable rather than a metric dependent measure” (Hair et al 1998: 246). It is a technique that can be used as an alternative to ordinary least squares (OLS) regression when the regressed variable is dichotomous.

One reason for these problems is that a dichotomous outcome has a maximum probability of 1 and a minimum probability of 0 whilst a linear regression line conceptually can extend positively and negatively to infinity (Pampel 2000). A second reason is that underpinning OLS regression is an assumption of additivity, that is the effect of a regressor on the regressed variable is constant for all values of the regressed variable regardless of the levels of the other regressors (Cohen et al 2003). For a dichotomous outcome, if the value of one regressor reaches a sufficiently high level to change the probability of experiencing an event from 0 to 1 it will result in the other regressors not exerting similar influence (Pampel 2000). “Thus [a dichotomous outcome] makes the influence of all the [regressor] variables inherently non-additive and interactive” (Pampel 2000:8)

Logistic regression is the appropriate regression technique when the regressed variable is dichotomous and the regressors are continuous. Logistic regression involves a two-step process to transform a dichotomous regressed variable into a

continuous, unconstrained and symmetrically distributed value (Pampel 2000). Step one: computes the odds of experiencing an event (expressed as the ratio of probability of the outcome being present to the probability of it not being present). This stage removes the upper constraint of a maximum value of 1 since “unlike probability odds have no upper bound” (Pampel 2000: 11). Step two: requires taking the natural logarithm (\ln) of the odds. This removes the lower boundary of 0 and creates a symmetrical distribution around the mid-point probability of .5. Thus this process “linearizes the inherent non-linear relationship between X and the probability of Y” (Pampel 2000: 14).

Whilst OLS regression predicts the value of the regressed variable, the logistic regression function predicts an underlying continuous value that represents the odds of each case having membership of a group and not a dichotomous regressed variable (Cohen et al 2003). Thus, one problem associated with logistic regression is that the regression function coefficients lack an intuitive metric and are therefore difficult to interpret and to evaluate (Long, 1997). This has resulted in a lack of standards in reporting and inconsistency in approach, terminology, concepts and interpretation (Peng and So 2002).

The goal of both regression techniques is to calculate a set of regression coefficients or beta values for the regressor variables that deliver predicted values that are close to the observed values of the regressed variable (Tabachnick and Fidell 2007). The strength of the relationship between the predicted and observed values is measured through the Pearson product-moment correlation coefficient (r). For OLS regression, R^2 measures the proportion of variation in the regressed variable that is predicted “from the best linear correlation of the independent variables” (Tabachnick and Fidell 2007: 130).

For logistic regression, variance cannot be accounted for in a “universal sense” due to the “inherent heteroscedasticity” of the non-additive model. Thus, goodness of fit is indicated by a measure of pseudo- R^2 (Cohen et al 2003: 504). One important consideration is that whilst regression analysis may reveal association it does not imply causation, especially within a cross-sectional survey-based design (Bryman and Cramer 2001, Tabachnick and Fidell 2007).

There are two important considerations when conducting regression analysis. The first is which regressors to include within the model, since a regression equation is sensitive to the combinations of variables it contains (Tabachnick and Fidell 2007). Including irrelevant variables will reduce model parsimony and over-specification can result in large standard errors whilst under specification can result in biased estimates of regression coefficients (for a full discussion see Berry and Feldman 1985). Thus, regressors should be selected based on theoretical and practical considerations (Hair et al 1998).

The second consideration is the order by which regressors are entered into the regression model. Field (2007: 160) notes that, “when predictors are all completely uncorrelated the order of variable entry has very little effect on the parameters however in social science we rarely have uncorrelated predictors so the method of predictor selection is crucial”. Cramer and Howitt (2004) identify three data entry processes.

- 1) Entry of all the predictors in a single step. This is also identified as “direct entry” and “forced entry” (Field 2007), “standard multiple regression” (Tabachnick and Fidell 2007), “confirmatory specification” (Hair et al 1998: 176). Single-step entry identifies those regressor variables that have the strongest relationship with the dependent variable when controlling for any correlation with the other regressor variables (Cramer and Howitt 2004).
- 2) Statistical determination of the order of entry. This is also referred to as “stepwise” entry (Tabachnick and Fidell 2007). Regressor variables are added or removed from the regression equation based on their contribution to the prediction of the dependent variable. Three variants of entry were considered: forward entry, backward entry and stepwise (Field 2007). Forward entry adds regressor variables to a constant-only model in an order determined by their correlation with the regressed variable. Backward entry removes regressor variables from a full model in an order determined by their statistically significant contribution to the prediction. Stepwise entry uses an iterative process that starts with the constant-only model then adds, reassesses and removes regressor variable according to their statistically significant contribution to

prediction. All methods stop when no additional improvement to prediction can be made. Whichever statistical entry technique is employed the aim is to identify the regression model that results in most statistically precise prediction of the regressed variable regardless of any theoretical basis for variable inclusion (Tabachnick and Fidell 2007).

- 3) Hierarchical or sequential entry order of entry. This process adds or removes regressor variables to a model in an order determined by the researcher. Decisions should be informed by previous research (Hair et al 1998). For example, regressor variables that have been shown to be predictors might be entered in order of their importance and then new predictors introduced and improvements in prediction evaluated for statistical significance (Field 2007). Hierarchical entry identifies whether an existing regression model can be improved by the addition of new regressor variables or the inclusion of interaction effects between regressor variables (Cohen et al 2003).

All methods can be subject to suppression effects, this where a regressor variable improves prediction of the regressed variable by enhancing the contribution of other regressor variables in the regression model and not through any individual link with the regressed variable (Tabachnick and Fidell 2007). Statistical-entry using a forward method may result in a Type II error by excluding predictors involved in suppressor effects (Field 2007). In addition multicollinearity amongst regressor variables can also result in specification error when using statistical entry. For example, when two regressor variables are highly correlated with each other and “have almost equal correlation with the dependent variable” then if one is included it is unlikely that the other will be included since little additional prediction explained by the excluded regressor variable (Hair et al 1998:179).

Statistical entry has been criticised as a method that encourages researcher abdication of responsibility and conceptual detachment (Cohen et al 2003, Tabachnick and Fidell 2007). There are concerns that this approach capitalises on random variations in the data that may result in the model being over-fitted to the data presents problems when replicating the results outwith the sample (Menard 2002). Although Hair et al (1998: 178) argue that statistical entry methods “provide an objective

method for selecting variables that maximise the prediction with the smallest number of variables employed” and single-step entry method can be criticised as an “atheoretical shotgun” approach (Tabachnick and Fidell 2007:143).

Thus there is some support for statistical entry methods as a method that can contribute towards understanding and generate insight by identifying superfluous variables (Tabachnick and Fidell 2007). However it is concluded that the single-step method is preferable “where there are no specific hypothesis about the order or importance of predictor variables” (Tabachnick and Fidell 2007: 454).

Several additional guidelines are given for the interpretation of the results of statistical-entry. Hair et al (1998) recommend examining any instances of multicollinearity between regressor variables when interpreting the regression equation. Cohen et al (2003) note that the ad hoc order produced by statistical entry may result in a model that capitalises on random sampling variation and contains underestimated confidence intervals. They advise that cross-validation of the model through a split-sample or new sample should be undertaken to check for the generalisability of any substantive interpretation and argue that “only those conclusions that hold for both samples should be drawn” (Cohen et al 2003:162).

Data Requirements: Sampling Adequacy

Measures of sampling adequacy vary for OLS regression this depending on the entry technique selected. Hair et al (1998) state that the minimum ratio should be 5:1 but that a ratio of between 15-20: 1 is preferable to ensure generalisable results. When statistical or stepwise procedure is used then the ratio increases to 40-50:1 (Hair et al 1998, Cohen et al 2003)

For logistic regression inadequate sample size can result in several problems for model evaluation and coefficient estimation. For example, inadequate sampling can result in under-estimated and over-estimated variances and an unreliable pseudo R^2 (Hosmer and Lemeshow 2000). In terms of coefficient estimation, inadequate sample size can result in sparseness of data (having cells with zero counts). Sparseness of data results in failure to converge on a solution, inflated estimations of

regression coefficients and their standard errors and a decrease in statistical power (Cohen et al 2003).

Unfortunately, there is no consensus as to what constitutes an adequate sample size for logistic regression and it is an under-researched area (Demidenko 2007). Due to the nature of non-linearity, sample size calculation is a complicated procedure for the non-statistician and there are few recognised guidelines (Hsieh et al 1998; Hosmer and Lemeshow 2000). Peduzzi et al (1996) present empirical evidence that a minimum of 10 events per parameter are needed. Hosmer and Lemeshow (2000) introduce a more stringent guideline by stating that there should be 10 cases per parameter for the least frequent category. In terms of overall sample size Long (1997) advises that samples should exceed 100 observations and ideally meet a criteria of 500 observations.

Assumptions for OLS Regression

OLS regression assumes that the relationship between the regressed variable and the regressor variables is both linear and additive and that variables included in the model are measured at the interval level and without error (Berry and Feldman 1985). Non linear and non-additive relationships will not be adequately represented by the regression equation produced by this technique (Cohen et al 2003). In addition any solution derived from a linear trend will be influenced by any outlying cases that are distant from the mean (Tabachnick and Fidell 2007). Furthermore, if the regressor variables are highly correlated both with each other and in combinations then results will be ambiguous since it will be difficult to pinpoint any unique contribution to prediction (Hair et al 1998).

When inference is the goal multivariate normality is required and the model should not omit any relevant variables or their interactions and that all relevant variables and their interactions are included in the model (Berry and Feldman 1985). Meeting these assumptions results in independence between and homoscedasticity or constant variance within error terms (Berry and Feldman 1985 Tabachnick and Fidell 2007:79).

OLS regression assumptions are tested through a combination of a priori screening of variables and post-hoc tests on the residuals from the solution (Tabachnick and Fidell 2007). It is possible to both delete outlying cases and transform variables in order to improve the fit of the regression model to the data (see Cohen et al 2003 for a full discussion). If data assumptions are met then, according to the Gauss-Markov theorem, OLS regression will produce coefficients and their parameter estimates that are BLUE: Best Linear Unbiased Estimators (Berry and Feldman 1985).

However use of transformation procedures can result in problems in interpreting the regression solution and case deletion can result in a model that is over-fitted to the observed data and lacks generalisability to a wider population (Hair et al 1998). Finally Berry and Feldman (1985:15) caution that adherence to data assumptions do “not guarantee that the least squares estimated...will always be the best estimates of the population parameters”.

This thesis takes the position that a regression solution that fails to meet data requirements should not be automatically discarded as not of interest and interpretation. For example, Tabachnick and Fidell (2007), note that normality whilst improving the analysis is not always required for a solution, that a non-linear relationship weakens but does not invalidate prediction, that multicollinearity can be accommodated if the only goal is prediction and that outliers should be retained for further investigation rather than deletion. In adopting this position the researcher is guided by an epistemology of scientific realism and thus is sensitive to the complexity and richness of social data. On one hand analysis techniques are applied with rigour and departures from assumptions are identified but data is given primacy and not transformed in order to meet technical requirements.

Assumptions for Logistic Regression

Logistic regression is a technique that is robust to violations of the statistical assumptions of the general linear model and thus does not require data transformation (Green et al 1998, Hair et al 1998). In particular data are not required to meet the assumptions of;

- a linear relationship between regressed and regressor variables,

- a normal distribution of the regressed variable and residuals
- the presence of regressor variables that are homoscedastic, measured at an interval or ratio and are unbounded.

Whilst logistic regression does not share the same strict statistical assumptions of OLS regression there are several requirements that increase the accuracy of the predictive model. These are assumptions of adequate sample size, meaningful coding of the regressed variable, a linear relationship between the logged odds of the regressed and regressor variables, inclusion of relevant variables and regressor variables and error terms that are not strongly correlated (Pampel 2000).

Appendix VII Treatment of Missing Values and Non-Response

This appendix reports on the treatment of missing values and non-response in Phase 3. Missing data processes can be ignorable, random or patterned (Hair et al. 1998). An ignorable missing data process is one that is within the control of the researcher and can be explicitly identified (for example questionnaire routing). Random missing data occurs where observed values are a random sample of population values and item non-response is independent both of respondent characteristics and responses to other variables (Hair et al. 1998). This is termed missing completely at random (MCAR). Where a missing data process is patterned it can be classified into two types (Jamshidian 2004):

- 1) Missing at Random (MAR) is where the missing value is dependent on the observed values (for example demographic characteristics) but is independent of failure to answer other variables (Rubin 1987).
- 2) Missing Not at Random (MNAR) is where failure to answer one item is linked to failure to respond to another but is independent of the observed values.

It is possible to apply one of four procedures to deal with missing values (Hair et al. 1998).

1. Remove all cases and variables with missing data and use observations with complete data only.
2. Delete case(s) and/or variables(s). Deletion can be undertaken pairwise (i.e. temporary suspension from analysis) or listwise (i.e. from all analysis) (Oppenheim 1992). Pairwise deletion maximizes the use of valid data.
3. Impute missing values from observed response or external data. Imputation can either be through substituting the grand mean for the variable, the group mean or case mean (Tabachnick and Fidell 2007). However care must be taken since imputation methods can result in failure to distinguish between calculated and observed values and thus result in imprecise prediction (Jamshidian 2004).

4. Model missing values from observed responses. If MAR or MNAR missing data processes are found only model-based procedures should be used (Little and Rubin 1987) since the application of the other methods introduces bias into the results (Hair et al. 1998).

Coding was selected to indicate any reasons for missing data that might characterise the missing data process (Hair et al 1998). Thus variables were coded as; “non-response = 99” where no user response was given and “non-applicable = 88” where a respondent was routed away from a question. Finally “don’t know= 6” and “don’t wish to say = 33” were used for items where participants could select a reason for non-response.

Cases and variables missing 5% or less of data are not sensitive to choice of missing value procedure (Tabachnick and Fidell 2007). Therefore the degree of missing data was established for each case and variable and then the pattern of missing data was identified before selection of the missing data procedure to be employed. Missing value analysis showed that 61% of cases (n=331) within the achieved sample had missing data and that 21% of cases (n=116) contained 5% or more missing values. Only one variable (current account ownership) did not contain any missing values and ten variables had 5% or more data missing. Therefore the procedure of using of complete observations only was rejected due to extent of missing data within the sample.

Analysis of Missing Data by Case

The next step was to identify any underlying processes and to determine the appropriate response for cases and variables with more than 5% of missing data (Hair et al. 1998). First cases with ignorable missing data as result of questionnaire routing were identified. The questionnaire routed those participants who did not have bank accounts and/or those without awareness or access to online banking away from sections 3, 4, 5 and 6 of the questionnaire. Frequency analysis showed that 6.5% of participants (n=35) did not have a bank account and a further 2.8% of participants (n=15) stated that their bank did not offer online banking or that they were uncertain that this facility existed. Listwise deletion removed these cases from all further

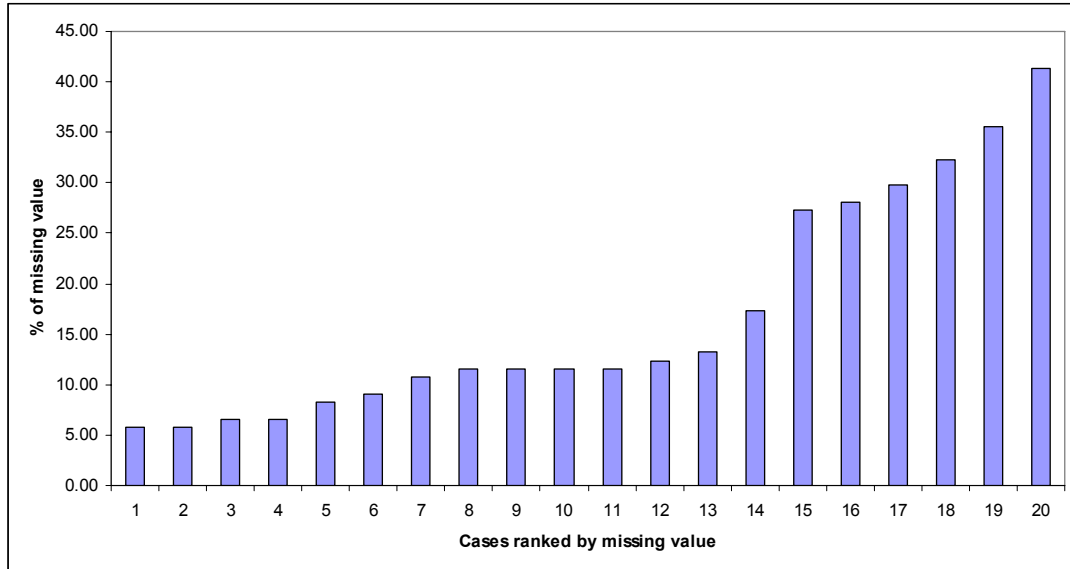
analysis since they were not within the population of interest. Thus 492 cases remained.

The listwise deletion of participants with no bank account and/or no awareness or access to online banking resulted in the reduction of cases with a proportion of 5% or more to 13% of cases (n=66). Missing values were explained by questionnaire routing for 70% of cases within this group (n=45), due to non-visitation of bank's web site and no intention for future use. These cases were retained as sub-group of interest within the analysis.

Cases were next examined where "Don't know" and "Don't wish to say" contributed to high levels of missing values. One case had replied "Don't wish to say" for 7 variables measuring influences on attitudes. This case was retained within the study since there is debate over whether "Don't know" indicates a valid attitude and therefore should not be treated as a missing value (Little and Rubin 1987). However computing mean scores is problematical when a Likert scale is used and the intention is to treat data as interval. Therefore within these seven attitudinal items "Don't know" was coded as a missing value and a pairwise deletion strategy was adopted.

The remaining were ranked according to proportion of missing data to determine if any were candidates for listwise deletion. If many scores are missing from an individual case it is thought best to drop this case from subsequent analysis (Bryman and Cramer 2001) but there is little guidance as to how much missing data can be tolerated, Tabachnick and Fidell (2007). Figure 1 shows that there is a discontinuity in the proportion of missing data with 6 cases having 27% or over of missing data and 14 cases 17% or under of missing data. It was decided to delete these 6 outlying cases listwise.

Figure 1 Rank Ordering of Cases With Non-Response of 5% Or More



When missing data is not MCAR listwise deletion can introduce bias (Oppenheim 1992), therefore it was necessary to identify if cases with missing values of 5% or more differed in any way from cases lower proportions of missing data. A dummy variable was assigned to all cases with 1= non-response >5% and 0= non-response <5%. The relationship between the dummy variable and other variables was tested. For non-interval data the multi-dimensional chi-square test was used and no significant relationships ($p < .05$) were found.

For interval data the independent t-test for mean differences was used. A significant relationship was found for seven attitudinal items shown in Table 1. Cases with non-response of >5% or over had slightly lower levels of agreement for each item statement. When departures from MCAR are not serious then the impact of this bias can be considered unimportant (Schafer and Graham 2002). Cohen's d was used to measure the effect size. In this instance the effect size could be classified as medium for all variables. The departure from MCAR was considered not serious and therefore the risk of introducing bias through the listwise deletion of six cases was considered acceptable.

Table 1 Significant mean differences between cases with missing values <5% and >5%

Item	< 5% Mean	>5% Mean	t	df	p 2-tail	d
To give me excellent services when accessing my account my banks web site should: (1= Strongly Disagree, 5=Strongly Agree)						
Have the facility to experiment with online banking	3.90	3.25	2.725	485	.01	.67
Help me learn more about financial services	4.06	3.50	2.512	485	.01	.63
Have information about how to make a complaint	4.38	3.94	2.339	484	.02	.54
Have details about how my account should work	4.43	3.94	2.576	483	.01	.65
To give me excellent services when searching for information my banks website should: (1= Strongly Disagree, 5=Strongly Agree)						
Have a search engine for in-site search	4.49	4.00	2.294	484	.02	.59
Have the facility to experiment with online banking	3.93	3.38	2.083	482	.04	.55
Technology Readiness						
You can usually figure out new high tech products and services without the help of others (1=Strongly Disagree, 5= Strongly Agree)	3.91	3.44	1.960	484	.05	.45

Analysis of Missing Data by Variable

Next levels of missing values were identified by variable. There were two further routing procedures that accounted for missing values within variable. Respondents who had not visited their bank’s web site were routed away from seven variables relating to previous bank web site use, accounting for 9.65% (n=47) of missing values. Respondents who had no intention of visiting their bank’s web site were routed away from two variables relating to likelihood of future use accounting for 12.5% (n=61) of missing values. Thus, for nine variables, routing accounted for missing value levels of 5% or over. The affected variables were retained for analysis without imputation since cases with these characteristics were of interest to the research. For non-metric variables “non-applicable” was use to define these cases as sub-group of the population and for metric variables “non-applicable” was classed as a missing value and these cases were deleted pairwise from subsequent analysis.

Next responses of “don’t know” or “do not wish to say” were explored. Examination by variable identified that one variable, “Household income”, had 23% (n=113) of data missing due to “Do not wish to say”, however whilst only 0.6% (n=3) responses were missing due to failure to complete the item. Although creating a problem in

terms of calculation, the inclusion of a “don’t wish to say” option may have resulted in limiting unexplained non-response due to the sensitivity of income information.

Further analysis was undertaken to determine if the observed income values represented a random sample of actual income values. A Q-Q plot contained a normal distribution of values and the sample mean lay within the estimated population mean parameters with 95% confidence. This indicates that the observed values represent a random sample of the population of income values and that the absence of data has not skewed the data.

Responses were then examined to determine if declining to answer this question was linked to any observed values. A dummy variable was created with 1= “Don’t wish to say and 0= “Other”. The relationship between the dummy variable and other variables was tested. Multi-dimensional chi-square tests were used to explore the relationship between declining to answer and response to non-interval variables and no significant relationships ($p < .05$) were found.

For interval data the independent t-test for mean differences was used. A significant relationship was found for one attitudinal item ($t=2.623$, $df= 150$, $p =.01$, two-tailed). There was tendency to agree more strongly that, “when searching for information a bank web site should be quick to download”, amongst those who did state income (mean=4.65) than amongst those who did not wish to state income (mean = 4.42). The mean difference between the two groups was 0.23 and the 95% confidence interval of the estimated population mean difference is between 0.06 and 0.39. Here Cohen’s $d= 0.31$ indicating that the difference in means, although significant, is small relative to the spread of the scores (Cohen 1988). Thus whilst tendency not to state income is linked to attitude the effect is not large and the use of inferential tests are appropriate.

Data Estimation Strategy

Finally a decision was needed on how to account for the remaining instances of missing data within the data set. Strategies for missing data estimation include: using prior knowledge, inserting mean values, using regression, expectation maximisation and multiple imputation (Tabachnick and Fidell 2007). However there

is no single best method and it is recognised that each approach introduces bias that impairs inference (Tabachnick and Fidell 2007). Schafer and Graham (2002:149), when reviewing of missing data procedures, argue that:

“With or without missing data, the goal of a statistical procedure should be to make valid and efficient inferences about a population of interest – not to estimate, predict or recover the same results that we would have seen with complete data”.

Therefore given these problems and considering the small proportion of data missing within the dataset it was decided to proceed using pairwise deletion within SPSS.

Response Bias

A comparison was made between the distribution of socio-economic and demographic characteristics within the sample and within the national population of Internet users there is bias within the sample in terms of age against Internet users aged 16-24 years and towards those aged 25-54 years (Table 2)

TABLE 2 Demographic and Socio-Economic Variables Distribution

	Percentage of Sample	Percentage of UK of Internet Users
Male	47.9	52.0
Female	52.1	48.0
Aged 16-24 Years	8.7	20.3
Aged 25-44 Years	49.5	44.8
Aged 45-54 Years	23.8	18.0
Aged 55-64 Years	13.3	12.0
Aged 65+	4.8	4.9
Single	29.2	32.0
Married/Cohabiting	58.0	59.0
Separated/Widowed/Divorced	12.8	9.0
Qualification Degree or Higher	48.1	24.1
Other Qualification	46.9	71.1
No Qualification	5.1	4.8

In terms of educational qualification there is a bias towards those who have attained degree level or higher and against those with other qualifications. There were no published statistics on Internet use by household income available therefore a comparison of distributions between the sample and the UK population was made. With regards to household income there is a bias against the lower income and towards the higher income bands, this may reflect statistics that Internet use is

positively correlated with individual income (Shepherd and Bryson 2007, Mintel 2006, Babb et al 2006).

Non-Response Bias

In terms of instrument non-response Assael and Keon (1982: 116) note that whereas response rate is often used as a surrogate measure of non-response error this approach “ignores differences between respondents and the total sample”. Armstrong and Overton (1977) describe three methods of estimating non-response bias: comparisons with known values for the population, subjective estimates and extrapolation.

Comparisons with known values are problematical since these values can be from survey data in itself is contaminated with non-response bias (Armstrong and Overton 1977). This method was rejected for this study since only known values for age and gender were available and these were based on survey data. Furthermore, this method would not account for non-demographic bias for example, intensity and frequency of Internet use has been found to bias response where a random sample has been drawn from a panel of Internet users (Schillewaert and Meulemeester 2005): those who are infrequent users are less likely to respond and more likely to respond late (Lukawetz 2002,).

Extrapolation methods examine the readiness of respondents to respond and is based on the assumption that those respond less readily will have similar characteristics to those who do not respond (Pace 1939). This technique compares responses across variables from those in either “successive waves” i.e. those who respond to follow-up requests, “concurrent waves” i.e. the use of more than one sub-samples and “time trends” the division of the sample into early and late responders (Armstrong and Overton 1977). Given time and resource constraints this study adopted a “time trends” approach.

The data set was examined for non-response bias using a “time trends” approach (Armstrong and Overton 1977). A dummy variable was computed where 1= “Day one response” and 2= “Day two or later response”. A frequency analysis showed that 62% (n= 302) responded on day one and 38% (n=184) responded on day two or later.

The relationship between the dummy variable and other variables was tested. For the non-interval data chi-square tests were used and no statistically significant relationships ($p < .05$) were found. For the interval data an independent t-test for mean differences was used. A statistically significant relationship between time wave and response was found for two attitudinal items shown in Table 3. The effect size (Cohen's d) for each of these differences is small and therefore non-response bias is considered to have little practical effect.

TABLE 3 Mean Differences Between Time Waves

Item	Mean Diff p	t df	d Power
To give me excellent services when searching for information my bank's website should have a search engine for in-site search (1=Strongly Disagree, 5= Strongly Agree)	-0.15 .04	-2.09 420	.19 .99
To give me excellent services when searching for information my bank's website should help me learn more about financial services (1=Strongly Disagree, 5= Strongly Agree)	-0.15 .05	-2.00 479	.19 .99

In terms of mis-reporting of answers a researcher can either: externally validate responses through independent observation, measure differences in response across Given the nature of this study item-non response was used as a measure of response quality and item non-response did not exceed 4% for all variables.

Appendix VIII Treatment of Scale Data

Scales are defined as collection of items which are combined to give a composite score and which are intended to identify levels of “theoretical variables not readily observable by direct means” (DeVellis 2003: 9). The scientific realist epistemology that guides this research requires that “knowledge claims be critically evaluated and tested to determine the extent to which they do, or do not, truly represent or correspond to that world” (Hunt 1990: 9). Thus it is appropriate to assess scale measurements for their reliability and validity (DeVellis 2003).

“Reliability refers to the capacity of a measure to produce consistent results” (Blaikie 2003:219). Consistency can be external, relating to the replication of results upon repeat application, and internal, relating to the strength of the relationships between items that are attempting to capture an underlying continuum (Spector 1992, Oppenheim 1992). External consistency can be demonstrated through repetition over time and splitting the dataset: internal consistency can be demonstrated by splitting the scale items (split-half procedure) and through calculation of coefficient alpha (Parameswaran et al 1979).

Consideration was given to the various tests of reliability. Test and retest was rejected due to time and cost constraints. Splitting the dataset and splitting the scale items have been questioned as to the sensitivity of the method by which the items and respondents are split (Peter 1979, Cronbach 2004). Thus reliability in the form of internal consistent was measured using coefficient alpha since it “results directly from the assumptions of the domain sampling model” (Churchill 1979: 68). Scores for scales used in the study are presented in Chapters 4 and 5.

“A measure is valid when the differences in observed scores reflect true differences on the characteristic one is attempting to measure “ (Churchill 1979: 65). There are several complementary methods of determining validity (Oppenheim 1992); these are content, convergent, discriminant and nomological (Hair et al 1998). Convergent validity confirms that the scale is correlated with other known measures of the concept, discriminant validity ensures that the scale is sufficiently different from

other similar concepts to be distinct and nomological validity determines if the scale demonstrates relationships shown to exist based on theory and/or prior research (Hair et al 1998:119). Content validity is the correspondence of the items with the theoretical construct being measured (Churchill 1979) and is assessed to the extent by which the items are derived from and correlate with credible prior research. Chapter 2 reviews the research from which items were synthesised and Chapter 4 describes the process by which additional items were constructed.

Calculation Of Risk Score

Respondents were asked how they felt about using online banking compared to other banking methods for account access and information search using a 5 point bi-polar scale. Perceived risk was measured for both online information seeking and account access. The computation of each risk score was undertaken in two stages. First the dimensionality of the scale was assessed through exploratory factor analysis and second the reliability of the scale was assessed through the computation of Cronbach's alpha. Cronbach's alpha has been interpreted as a measure of unidimensionality (Cortina 1993) however Grayson (2004) has demonstrated that structure can vary across data sets with the same alpha value and thus this study uses factor analysis and the computation of the alpha score.

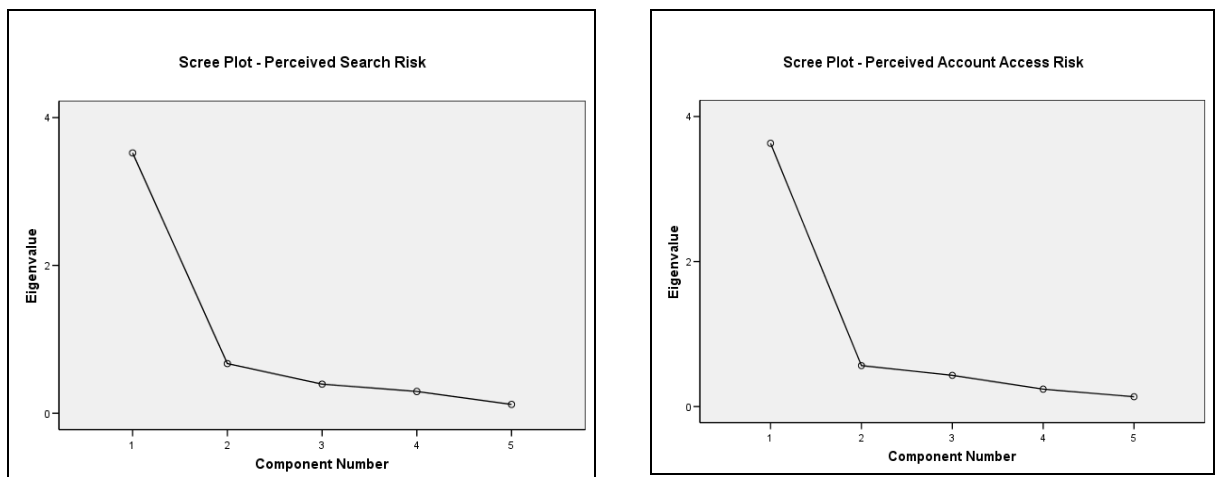
Scale Dimensionality

Exploratory PCA analysis was used to determine the dimensionality of each set of risk item statements. Data was first checked to ensure it met the assumptions of this technique. The number of observations was 389 and the number of risk variables was 5, hence the ratio of observations to variables is almost 78:1 which meets the recommended criteria. Both sets of items met other data requirements for factor analysis. Visual inspection of the correlation matrix indicated the presence of statistically significant relationships among variables. For search risk Bartlett's test statistics were chi-square = 1633.24, df=10, p=.00 and for account access risk, chi-square=1683.18, df=10, p=.00. Measures of sampling adequacy were both greater than .80, which is considered great.

Factor Extraction

For both task scenarios the first factor extracted for over 70% (search risk = 70.4% and account access risk =72.6%) of the explained variance. In the social sciences a factor solution that accounts for 60% of the total variance is considered satisfactory (Hair et al 1998). For search risk the eigenvalue for this first factor=3.25 and for account access risk the eigenvalue=3.63. For both task scenarios the value second eigenvalue is <.70 which is the lowest value for inclusion suggested by Blaikie (2003). The decision to extract one factor was confirmed by inspection of the Scree plots (Figure 1 and 2) that show that the break point occurs at the second component for each set of items. Thus both scales should be considered unidimensional.

Figures 1 and 2 Perceived Search Risk and Perceived Account Access Risk



Factor Loading

Given that only one factor was extracted for each set of items then there was no need to rotate the factor solution. The factor loadings for each task condition are given in rank order in Tables 1 and 2. All items exceed the loading of 0.50 given by Blaikie (2003) for inclusion within an unrotated factor.

Tables 1 and 2 Factor Solution for Perceived Search Risk

Perceived Search Risk Item	Factor Loading
Search is easy	.88
Search is accurate	.86
Search is quick	.86
Search is cheap	.80
Search is secure	.79

Perceived Access Risk Item	Factor Loading
Access is quick	.89
Access is easy	.88
Access is accurate	.87
Access is cheap	.81
Access is secure	.81

Each loading can be considered as the correlation between an individual item and a factor and thus squaring these values gives a measure of the substantive importance of each item. Thus ease or difficulty of search is of the greatest substantive importance to perceptions of search risk with a squared value of 0.77 with task security as the least important with a value of 0.59.

In contrast, speed of access has the greatest substantive importance to perceptions of access risk with a squared factor loading of 0.79 and that task security is the least important with a squared loading of 0.66. Overall there is a similarity in the order of loading with only a slight discrepancy in the position of task speed which has a higher loading for account access risk. This suggests that contribution of each risk dimension to the overall risk construct do not vary greatly across task condition.

Scale Consistency and Reliability

Hair et al (1998) outline three diagnostic measures to assess the internal consistency and reliability of a scale, the item to total correlation, the inter-item correlation and Cronbach's alpha. All items exceed the lower acceptable limit for item to total correlation of 0.50. All items exceed the inter-item lower limit of 0.30. Finally the reliability of the scale is measured using Cronbach's alpha, which has a lower limit of .70 (Table 3). Thus the scales can be considered internally consistent and reliable.

TABLE 3 SCALE CONSISTENCY AND RELIABILITY.

Scale	Item-to-Total		Inter-item		Cronbach's Alpha
	Min	Max	Min	Max	
Perceived Search Risk	.67	.80	.51	.87	.89
Perceived Account Access Risk	.70	.81	.54	.86	.90

Computation of Risk Score

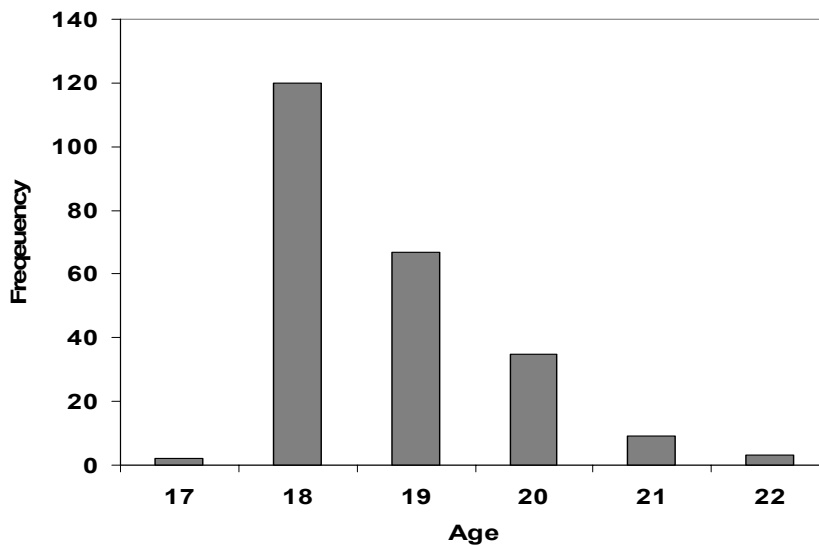
Once scale dimensionality, consistency and reliability had been established the perceived risk score for each task was computed. Individual item scores were summed then divided by the number of items to give a standardised risk score. A score of 1 indicates low perceptions of risk and a score of 5 indicates high perceptions of risk. Results are reported in Chapter 5.

Appendix IX Phase 2: Descriptive Statistics

Gender

		Frequency	Valid Percentage
Valid	Male	124	52.5
	Female	112	47.5
	Total	236	100.0
Missing Values	Non Response	0	0

Age



Mean = 18.74, Std. Dev. =0.95, N=236

Visited Bank Web Site

		Frequency	Valid Percentage
Valid	Yes	100	42.6
	No	135	57.4
	Total	235	100.0
Missing Values	Non Response	1	0.4

Banks Online

		Frequency	Valid Percentage
Valid	Yes	49	20.8
	No	187	79.2
	Total	236	100.0
Missing Values	Non Response	0	0

Shopped Online

		Frequency	Valid Percentage
Valid	Yes	89	37.7
	No	147	62.3
	Total	236	100.0
Missing Values	Non Response	0	0

Length of Internet Use

		Frequency	Valid Percentage
Valid	Less than one year	17	7.2
	1 Year	14	6.0
	2 Years	49	20.9
	3 Years	72	30.6
	4 Years	41	17.4
	5 Years	26	11.1
	More than 5 Years	16	6.8
	Total	235	100.0
Missing Values	Non Response	1	0.4

Hours of Internet Use

		Frequency	Valid Percentage
Valid	Less than 2 hours	56	23.8
	2-4 Hours	95	40.4
	5-7 Hours	49	20.9
	8-10 Hours	24	10.2
	More than 10 Hours	11	4.7
	Total	235	100.0
Missing Values	Non Response	1	0.4

Product Knowledge

		Frequency	Valid Percentage
Valid	Good	24	10.3
	Better than average	56	23.9
	Average	108	46.2
	Less than average	38	16.2
	Poor	8	3.4
	Total	234	100.0
Missing Values	Non Response	2	0.8

Appendix X Phase 3: Descriptive Statistics

Gender

		Frequency	Valid Percentage
Valid	Male	227	48.4
	Female	242	51.6
	Total	469	100.0
Missing Values	Don't wish to say	2	0.4
	Non Response	2	0.4

Age

		Frequency	Valid Percentage
Valid	16-24 Years	42	8.9
	25-34 Years	121	25.7
	35-44 Years	113	24.0
	45-54 Years	109	23.1
	55-64 Years	63	13.4
	65+	23	4.9
	Total	471	100.0
Missing Values	Don't wish to say	2	0.4
	Non Response	0	0

Annual Household Income

		Frequency	Valid Percentage
Valid	Under £9,999	29	8.0
	£10,000 - £19,999	77	21.2
	£20,000-£29,999	77	21.2
	£30,000-£39,999	65	17.9
	£40,000-£49,999	46	12.7
	£50,000-£59,999	23	3.6
	£60,000 or above	46	12.7
	Total	363	100.0
Missing Values	Don't wish to say	107	23.3
	Non Response	3	0.6

Highest Educational Qualification Attained

		Frequency	Valid Percentage
Valid	None	23	5.0
	GCSE/ Scottish Standard	89	19.3
	A Level/Scottish Higher	60	13.0
	Diploma	66	14.3
	Undergraduate	134	29.0
	Postgraduate	90	19.5
	Total	462	100.0
Missing Values	Don't wish to say	11	2.3
	Non Response	0	0

Banking Behaviour

Banking Method Used Most Regularly

		Frequency	Valid Percentage
Valid	Branch banking	104	22.1
	Telephone banking	20	4.2
	Online banking	347	73.7
	Total	471	100.0
Missing Values	Non Response	2	0.4

Visited Bank Web Site

		Frequency	Valid Percentage
Valid	Yes	430	90.9
	No	43	9.1
	Total	473	100.0
Missing Values	Non Response	0	0

Has Intention to Visit Bank Web Site in Future

		Frequency	Valid Percentage
Valid	Yes	416	87.9
	No	55	11.6
	Total	471	100.0
Missing Values	Non Response	2	0.4

Strength of Intention to Visit for Account Access

		Frequency	Valid Percentage
Valid	Extremely unlikely	11	2.7
	Unlikely	1	0.2
	No Opinion	11	2.7
	Likely	39	9.5
	Extremely Likely	348	84.9
	Total	410	100.0
Missing Values	Non Response	8	1.7

Strength of Intention to Visit for Information Search.

		Frequency	Valid Percentage
Valid	Extremely unlikely	11	2.7
	Unlikely	16	3.9
	No Opinion	60	14.7
	Likely	207	50.6
	Extremely Likely	115	28.1
	Total	409	100.0
Missing Values	Non Response	9	1.9

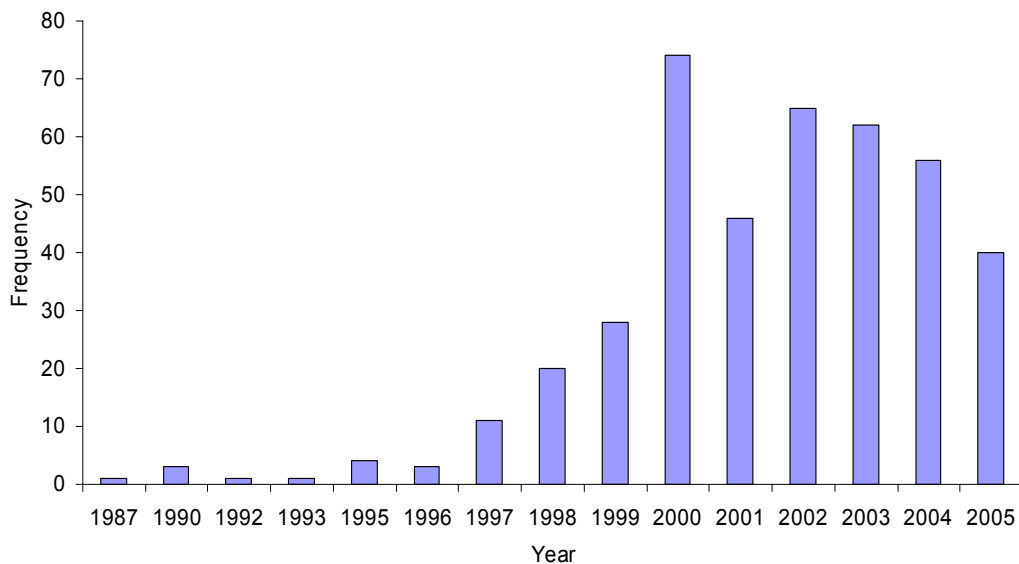
Frequency Of Bank Web Site Use for Information Search in Previous 12 Months

		Frequency	Valid Percentage
Valid	Not at all	42	10.0
	1-3 times	149	35.6
	4-6 times	105	25.1
	7-9 times	38	9.1
	10-12 times	18	4.3
	More than 12 times	66	15.8
	Total	418	100.0
Missing Values	Non Response	12	2.5

Frequency Of Bank Web Site Use for Account Access in Previous 12 Months

		Frequency	Valid Percentage
Valid	Not at all	31	7.3
	1-3 times	17	4.0
	4-6 times	10	2.3
	7-9 times	19	4.5
	10-12 times	25	5.9
	More than 12 times	324	76.1
	Total	426	100.0
Missing Values	Non Response	4	0.8

Year of First Visit to Bank Web Site



Mean = 2001.43, Std Dev = 2.62, n = 415

Current Account Understanding

		Frequency	Valid Percentage
Valid	Poor	1	0.2
	Less than average	1	0.2
	Average	73	15.0
	Better than average	105	22.2
	Good	293	61.9
	Total	473	100.0
Missing Values	Non Response	0	0

Ability to Manage a Current Account

		Frequency	Valid Percentage
Valid	Poor	2	0.4
	Less than average	6	1.3
	Average	79	16.8
	Better than average	99	21.0
	Good	285	60.5
	Total	471	100.0
Missing Values	Non Response	2	0.4

Internet Behaviour

Frequency of Internet use

		Frequency	Valid Percentage
Valid	Every day	418	88.9
	Several times a week	44	9.4
	Once a week	3	0.6
	1-3 times a month	3	0.6
	1-6 times a year	2	0.4
	Total	470	100.0
	Missing Values	Non Response	3

Broadband connection at Home

		Frequency	Valid Percentage
Valid	No access	7	1.5
	Dial-up	57	12.1
	Broadband	406	85.8
	Other	3	0.6
	Total	473	100.0
Missing Values	Non Response	0	0

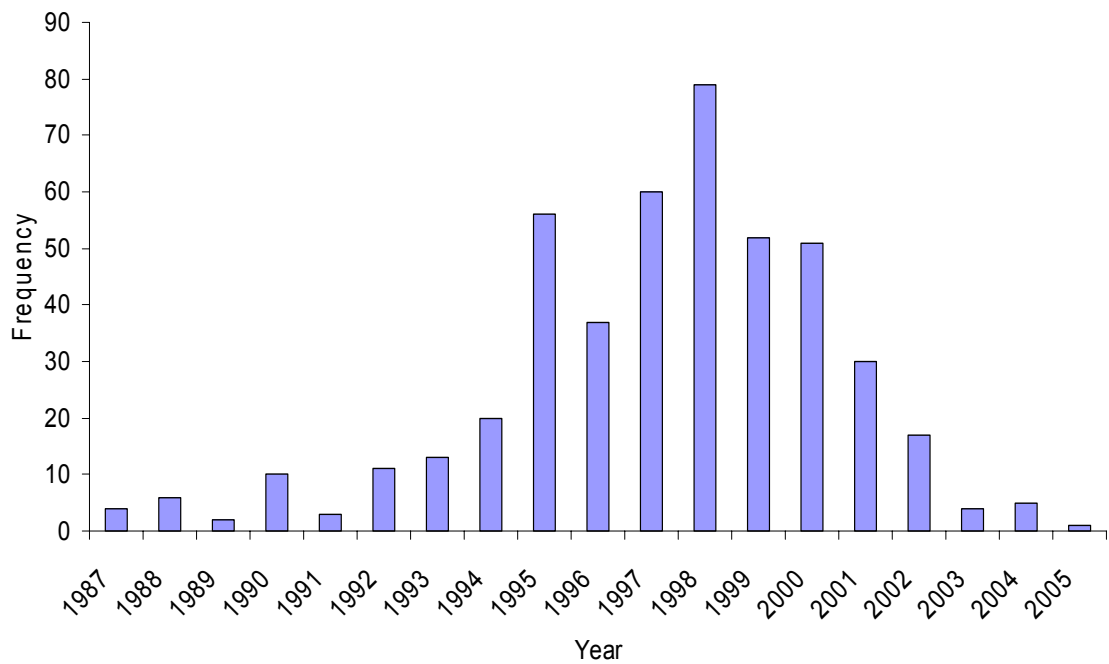
Frequency of Internet Use for Information Search in Last 12 Months

		Frequency	Valid Percentage
Valid	Every day	172	36.4
	Several times a week	195	41.2
	Once a week	76	16.1
	1-3 times a month	23	4.9
	1-6 times a year	7	1.5
	Total	473	100.0
Missing Values	Non Response	0	0

Frequency of Internet Use for Purchase in Last 12 Months

		Frequency	Valid Percentage
Valid	Every day	26	5.5
	Several times a week	99	20.9
	Once a week	101	21.4
	1-3 times a month	179	37.8
	1-6 times a year	68	14.4
	Total	473	100.0
Missing Values	Non Response	0	0

Year of First Internet Use



Mean = 1997.20 , Std. Dev.= 3.17 , n=461

Internet Understanding

		Frequency	Valid Percentage
Valid	Poor	0	0
	Less than average	2	0.4
	Average	62	13.1
	Better than average	105	22.2
	Good	304	64.3
	Total	473	100.0
Missing Values	Non Response	0	0

Internet Ability

		Frequency	Valid Percentage
Valid	Poor	0	0
	Less than average	1	0.2
	Average	56	11.8
	Better than average	105	22.2
	Good	311	65.8
	Total	473	100.0
Missing Values	Non Response	0	0

Appendix XI Phase 3: Exploratory Analysis

Information Search and Individual Characteristics

T-Test: Gender and Information Search

Dimension	Gender	n	Mean	SD	SE	MD	t	Sig.
							df	
Information Provision	Male	213	0.05	1.03	0.07	0.10	1.02	.31
	Female	221	-0.05	0.99	0.07		432	
Risk Reduction	Male	213	0.14	1.02	0.06	0.21	2.19	.03
	Female	221	-0.07	0.95	0.06		432	
Graphics	Male	213	-0.02	1.00	0.07	0.10	-0.59	.56
	Female	223	0.04	1.00	0.07		432	

ANOVA: Age and Information Search

Dimension	Age	n	Mean	SD	SE	F	df	Sig.
Information Provision	16-24 yrs	37	0.08	1.17	0.19			
	25-34 yrs	111	-0.11	1.07	0.10			
	35-44 yrs	105	0.04	0.95	0.09			
	45-54 yrs	104	-0.13	0.93	0.09			
	55-64 yrs	58	0.15	1.07	0.14			
	65 + yrs	20	0.34	0.70	0.16	1.40	5,429	.22
Risk Reduction	16-24 yrs	37	0.38	1.11	0.18			
	25-34 yrs	111	0.24	0.94	0.09			
	35-44 yrs	105	0.00	0.91	0.09			
	45-54 yrs	104	0.00	0.97	0.10			
	55-64 yrs	58	-0.43	1.06	0.14			
	65 + yrs	20	-0.21	0.95	0.21	4.76	5,429	.00
Graphics	16-24 yrs	37	0.37	1.25	0.21			
	25-34 yrs	111	0.11	0.97	0.09			
	35-44 yrs	105	0.00	1.02	0.10			
	45-54 yrs	104	-0.06	0.92	0.09			
	55-64 yrs	58	-0.10	0.97	0.13			
	65 + yrs	20	-0.33	1.02	0.05	1.84	5,429	0.10

Levene test statistic: Information Provision = 1.81, df = 5, 429, p = .11; Risk Reduction = 0.72, df = 5,429, p = .62, Graphics = 1.60, df = 5,429, p = .16.

ANOVA: Educational Attainment and Information Search

Dimension	Qualification	n	Mean	SD	SE	F	df	Sig.
Information Provision	No Formal	20	0.16	0.91	0.20	0.93	5,421	.46
	GCSE etc	80	0.08	0.96	0.11			
	A Level etc	56	-0.10	0.97	0.13			
	Diploma	58	-0.12	1.01	0.13			
	Undergraduate	126	-0.11	1.03	0.09			
	Postgraduate	87	0.10	1.07	0.12			
Risk Reduction	No Formal	20	0.21	0.84	0.19	1.60*	5,127	.17
	GCSE etc	80	-0.12	0.81	0.09			
	A Level etc	56	0.02	0.80	0.11			
	Diploma	58	-0.17	0.98	0.13			
	Undergraduate	126	0.06	1.14	0.10			
	Postgraduate	87	0.21	1.09	0.12			
Graphics	No Formal	20	-0.40	1.19	0.27	4.70	5,421	.00
	GCSE etc	80	-0.35	0.92	0.10			
	A Level etc	56	0.07	0.91	0.12			
	Diploma	58	0.01	0.87	0.11			
	Undergraduate	126	0.24	1.07	0.09			
	Postgraduate	87	0.18	1.01	0.11			

*Welch F statistic

Levene test statistic: Information Provision = 0.35, df = 5, 421, p = .88; Graphics = 1.15, df = 5,421, p = .33. The result of the Levene test statistic were significant for Risk Reduction = 3.27, df = 5,421, p = .01, in this instance the Welch F-statistic was used.

ANOVA: Household Income and Information Search

Dimension	Income	n	Mean	SD	SE	F	df	Sig.
Information Provision	Under £9,999	26	0.01	1.14	0.22	0.77	6,330	.59
	£10,000-£19,999	69	0.13	0.98	0.12			
	£20,000-£29,999	71	0.01	1.12	0.13			
	£30,000-£39,999	62	-0.09	1.11	0.14			
	£40,000-£49,999	46	-0.02	0.80	0.12			
	£50,000-£59,999	21	-0.03	1.06	0.23			
	£60,000 or above	42	-0.28	0.84	0.13			
Risk Reduction	Under £9,999	26	-0.15	1.03	0.20	0.84	6,330	.54
	£10,000-£19,999	69	-0.05	1.05	0.13			
	£20,000-£29,999	71	-0.04	0.88	0.10			
	£30,000-£39,999	62	0.08	0.92	0.12			
	£40,000-£49,999	46	-0.03	0.94	0.14			
	£50,000-£59,999	21	-0.04	1.01	0.22			
	£60,000 or above	42	0.31	1.34	0.21			
Graphics	Under £9,999	26	0.04	1.16	0.23	0.95	6,330	.46
	£10,000-£19,999	69	-0.17	0.98	0.12			
	£20,000-£29,999	71	0.13	1.07	0.13			
	£30,000-£39,999	62	0.14	0.96	0.12			
	£40,000-£49,999	46	-0.09	0.89	0.13			
	£50,000-£59,999	21	0.05	0.66	0.14			
	£60,000 or above	42	0.17	1.14	0.18			

Levene test statistic: Information Provision = 1.06, df = 6, 3301, p = .39; Risk Reduction = 1.81, df = 6,330, p = .10; Graphics = 1.76, df = 6,330, p = .11.

Account Access and Individual Characteristics

T-Test: Gender and Account Access

Dimension	Gender	n	Mean	SD	SE	MD	t df	Sig.
Transaction Support	Male	207	0.10	0.92	0.06	0.17	1.80	0.07
	Female	227	-0.07	1.06	0.07		432	
Learning Environment	Male	207	-0.10	0.96	0.07	-0.16	-1.67	0.10
	Female	227	0.05	1.00	0.07		432	
Risk Reduction	Male	207	0.01	1.13	0.08	0.01	0.08	0.93
	Female	227	0.00	0.86	0.06		432	

ANOVA: Age and Account Access

Dimension	Age	n	Mean	SD	SE	F	df	Sig.
Transaction Support	16-24 yrs	40	0.24	0.92	0.15	0.86	5,429	.51
	25-34 yrs	111	-0.07	0.96	0.09			
	35-44 yrs	103	0.00	1.07	0.11			
	45-54 yrs	101	-0.24	0.93	0.09			
	55-64 yrs	59	-0.07	1.21	0.16			
	65 + yrs	21	0.24	0.68	0.15			
Learning Environment	16-24 yrs	40	0.06	1.08	0.17	0.26	5,429	.94
	25-34 yrs	111	-0.03	0.89	0.08			
	35-44 yrs	103	0.06	1.13	0.11			
	45-54 yrs	101	-0.09	1.01	0.10			
	55-64 yrs	59	-0.02	1.07	0.14			
	65 + yrs	21	-0.03	0.76	0.17			
Risk Reduction	16-24 yrs	40	0.25	0.89	0.15	1.50	5,429	.19
	25-34 yrs	111	0.14	0.81	0.08			
	35-44 yrs	103	-0.02	0.92	0.09			
	45-54 yrs	101	-0.14	1.20	0.12			
	55-64 yrs	59	-0.08	1.10	0.14			
	65 + yrs	21	-0.06	0.74	0.16			

Levene test statistic: Transaction Support = 2.01, df = 5, 429, p = .08; Learning Environment = 0.92, df = 5,429, p=.47, Risk Reduction = 2.08, df = 5,429, p = .07.

ANOVA: Educational Attainment and Account Access

Dimension	Qualification	n	Mean	SD	SE	F	df	Sig.
Transaction Support	No Formal	22	0.26	0.91	0.19	2.67	5,422	.02
	GCSE etc	77	0.25	0.88	0.10			
	A Level etc	58	0.11	0.89	0.12			
	Diploma	59	-0.14	1.16	0.15			
	Undergraduate	128	-0.19	0.97	0.09			
	Postgraduate	84	-0.02	1.05	0.12			
Learning Environment	No Formal	22	-0.05	1.14	0.24	1.12	5,422	.35
	GCSE etc	77	-0.17	1.04	0.12			
	A Level etc	58	-0.16	1.02	0.13			
	Diploma	59	0.11	0.83	0.11			
	Undergraduate	128	0.01	1.09	0.10			
	Postgraduate	84	0.13	0.95	0.10			
Risk Reduction	No Formal	22	0.08	0.79	0.17	0.55	5,422	.74
	GCSE etc	77	0.10	0.90	0.10			
	A Level etc	58	0.05	0.69	0.09			
	Diploma	59	-0.04	1.35	0.18			
	Undergraduate	128	-0.11	0.95	0.08			
	Postgraduate	84	0.04	1.06	0.12			

Levene test statistic: Transaction Support = 1.32, df = 5, 422, p = .26; Learning Environment = 0.57, df = 5,422, p = .73, Risk Reduction = 1.85, df = 5,422, p = .10.

ANOVA: Household Income and Account Access

Dimension	Income	n	Mean	SD	SE	F	df	Sig.
Transaction Support	Under £9,999	26	0.01	0.97	0.19	0.10	6,329	.99
	£10,000-£19,999	74	0.07	0.95	0.11			
	£20,000-£29,999	66	-0.01	1.12	0.14			
	£30,000-£39,999	61	0.05	1.00	0.13			
	£40,000-£49,999	44	-0.04	0.92	0.14			
	£50,000-£59,999	22	0.02	1.18	0.25			
	£60,000 or above	43	-0.02	0.82	0.13			
Learning Environment	Under £9,999	26	0.01	1.01	0.20	0.28	6,329	.95
	£10,000-£19,999	74	0.01	1.03	0.12			
	£20,000-£29,999	66	-0.10	1.11	0.14			
	£30,000-£39,999	61	-0.02	1.15	0.15			
	£40,000-£49,999	44	0.12	0.85	0.13			
	£50,000-£59,999	22	-0.01	0.86	0.18			
	£60,000 or above	43	-0.11	0.91	0.14			
Risk Reduction	Under £9,999	26	0.09	0.71	0.14	0.23	6,329	.97
	£10,000-£19,999	74	0.01	1.16	0.14			
	£20,000-£29,999	66	-0.04	1.15	0.14			
	£30,000-£39,999	61	-0.06	1.06	0.14			
	£40,000-£49,999	44	-0.07	0.79	0.12			
	£50,000-£59,999	22	0.00	0.85	0.18			
	£60,000 or above	43	0.12	0.86	0.13			

Levene test statistic: Transaction Support = 0.57, df = 6,329, p = .75; Learning Environment = 0.54, df = 6,329, p = .78, Risk Reduction = 0.96, df = 6,329, p = .45.

Internet Behaviour and Information Search

Correlation: Year of First Use and Information Search Anticipated Provision

Dimension	r	p
Information Provision	0.01	.89
Risk Reduction	-0.11	.03
Graphics	-0.02	.69

T-Test: Daily Use and Information Search

Dimension	Daily User	n	Mean	SD	SE	MD	t df	Sig.
Information Provision	Yes	385	0.01	1.00	0.05	0.07	0.46	.64
	No	49	-0.06	1.02	0.15		432	
Risk Reduction	Yes	385	0.07	0.98	0.05	0.39	2.63	.01
	No	49	-0.31	1.00	0.14		432	
Graphics	Yes	385	0.03	1.01	1.01	0.07	0.45	.65
	No	49	-0.04	0.98	0.98		432	

T-Test: Home Broadband and Information Search

Dimension	Broadband	n	Mean	SD	SE	MD	t df	Sig.
Information Provision	No	60	-0.12	1.03	0.13	-0.13	-0.94	.35
	Yes	377	0.01	1.00	0.05		435	
Risk Reduction	No	60	-0.24	1.12	0.15	-0.30	-2.20	.03
	Yes	377	0.07	0.96	0.05		435	
Graphics	No	60	0.25	1.09	0.14	0.27	1.96	.05
	Yes	377	-0.02	0.99	0.05		435	

ANOVA: Internet Understanding and Information Search

Dimension	Ability	n	Mean	SD	SE	F	df	Sig.
Information Provision	Average	56	-0.01	0.97	0.13			
	Better than average	99	-0.07	1.01	0.10			
	Good	280	0.02	1.02	0.06	0.31	2,432	.73
Risk Reduction	Average	56	-0.29	0.97	0.13			
	Better than average	99	-0.12	1.06	0.11			
	Good	280	0.14	0.96	0.06	5.86	2,432	.00
Graphics	Average	56	-0.17	0.82	0.11			
	Better than average	99	0.04	0.96	0.10			
	Good	280	0.01	1.04	0.05	1.07	2,432	.35

Levene test statistic: Information Provision = 0.42, df = 2, 432, p = .66; Risk Reduction = 0.58, df = 2,432, p = .56 Graphics = 2.39, df = 2,432, p = .09.

ANOVA: Internet Ability and Information Search

Dimension	Ability	n	Mean	SD	SE	F	df	Sig.
Information Provision	Average	51	0.05	1.03	0.14	0.25	2,433	0.78
	Better than average	101	-0.06	1.00	0.10			
	Good	284	0.01	1.01	0.06			
Risk Reduction	Average	51	-0.42	0.89	0.13	9.06	2,433	.00
	Better than average	101	-0.13	1.08	0.11			
	Good	284	0.15	0.95	0.06			
Graphics	Average	51	-0.18	0.82	0.11	1.05	2,433	.35
	Better than average	101	0.04	0.98	0.10			
	Good	284	0.04	1.04	0.06			

Levene test statistic: Information Provision = 0.69, df = 2, 433, p = .50; Risk Reduction = 1.22, df = 2,433, p = .30 Graphics = 1.94, df = 2,433, p = .15.

Correlation: Internet Involvement and Information Search Anticipated Provision

Dimension	r	p
Information Provision	-0.11	.03
Risk Reduction	0.08	.12
Graphics	0.04	.37

Internet Behaviour and Account Access

Correlation: Year of First Use and Account Access Anticipated Provision

Dimension	r	p
Transaction Support	0.04	.42
Learning Environment	-0.06	.25
Risk Reduction	0.06	.24

T-Test: Daily Use and Account Access

Dimension	Daily User	n	Mean	SD	SE	MD	t df	Sig.
Transaction Support	Yes	388	-0.02	1.01	0.05	-0.18	-1.15	.25
	No	47	0.16	0.95	0.14		433	
Learning Environment	Yes	388	0.01	0.99	0.05	0.15	.99	.40
	No	47	-0.15	1.19	0.17		54	
Risk Reduction	Yes	388	0.05	0.96	0.05	0.49	3.24	.01
	No	47	-0.44	1.18	0.17		54	

T-Test: Home Broadband and Account Access

Dimension	Broadband	n	Mean	SD	SE	MD	t df	Sig.
Transaction Support	No	60	-0.10	0.90	0.11	-0.12	-0.84	.40
	Yes	377	0.02	1.01	0.05		435	
Learning Environment	No	60	-0.11	0.96	0.12	-0.12	-0.83	.41
	Yes	377	0.00	1.02	0.05		435	
Risk Reduction	No	60	-0.38	1.25	0.16	-0.44	-2.59	.01
	Yes	377	0.06	0.94	0.05		70	

ANOVA: Internet Understanding and Account Access

Dimension	Ability	n	Mean	SD	SE	F	df	Sig.
Transaction Support	Average	56	0.14	1.09	0.15	0.71	2,432	.49
	Better than average	95	-0.07	1.06	0.11			
	Good	284	0.00	0.97	0.06			
Learning Environment	Average	56	-0.36	0.99	0.13	4.53	2,432	.01
	Better than average	95	-0.06	0.99	0.10			
	Good	284	0.07	1.01	0.06			
Risk Reduction	Average	56	-0.21	1.16	0.15	1.57*	2, 119	.21
	Better than average	95	-0.05	1.08	0.11			
	Good	284	0.06	0.93	0.06			

*Welch F statistic

Levene test statistic: Transaction Support = 1.16, df = 2, 432, p = .31; Learning Environment = 0.16, df = 2,432, p = .85). Levene test statistic was significant for Risk Reduction = 4.52, df = 2,432, p=.01, in this instance the Welch F-statistic was used.

ANOVA: Internet Ability and Account Access

Dimension	Ability	n	Mean	SD	SE	F	df	Sig.
Transaction Support	Average	50	0.18	1.15	0.16	2.01	2,433	.37
	Better than average	94	-0.06	1.06	0.11			
	Good	292	-0.01	0.96	0.06			
Learning Environment	Average	50	-0.30	0.98	0.14	6.42	2,433	.04
	Better than average	94	-0.10	1.01	0.10			
	Good	292	0.06	1.00	0.06			
Risk Reduction	Average	50	-0.31	1.15	0.16	3.18*	2,107	.05
	Better than average	94	-0.09	1.12	0.12			
	Good	292	0.08	0.91	0.05			

*Welch F statistic

Levene test statistic: Transaction Support = 2.31, df = 2, 433, p = .10; Learning Environment = 0.07, df = 2,433, p = .93. Levene test statistic was significant for Risk Reduction = 6.01, df = 2,433, p=.00, in this instance the Welch F-statistic was used.

Correlation: Internet Involvement and Account Access Anticipated Provision

Dimension	r	p
Transaction Support	-0.07	.16
Learning Environment	-0.05	.35
Risk Reduction	0.07	.19

Product Behaviour and Information Search

ANOVA: Current Account Understanding and Information Search

Dimension	Ability	n	Mean	SD	SE	F	df	Sig.
Information Provision	Average	65	-0.03	1.05	0.13	0.11	2,432	.89
	Better than average	96	0.04	0.88	0.09			
	Good	274	-0.01	1.04	0.06			
Risk Reduction	Average	65	-0.18	1.03	0.13	1.76	2,432	.17
	Better than average	96	0.02	1.01	0.10			
	Good	274	0.08	0.98	0.06			
Graphics	Average	65	0.01	0.93	0.12	0.09	2,432	.92
	Better than average	96	-0.02	1.02	0.10			
	Good	274	0.03	1.01	0.06			

Levene test statistic: Information Provision = 0.23, df = 2, 432, p = .89; Risk Reduction = 3.46, df = 2,432, p = .17 Graphics = 0.18, df = 2,432, p=.92.

ANOVA: Current Account Ability and Information Search

Dimension	Ability	n	Mean	SD	SE	F	df	Sig.
Information Provision	Average	71	-0.09	1.03	0.12	0.50	2,424	.61
	Better than average	90	0.06	0.93	0.10			
	Good	266	0.01	1.03	0.06			
Risk Reduction	Average	71	-0.06	1.00	0.12	0.60	2,424	.55
	Better than average	90	-0.02	1.07	0.11			
	Good	266	0.07	0.97	0.06			
Graphics	Average	71	0.01	0.99	0.12	0.13	2,424	.89
	Better than average	90	-0.04	0.94	0.10			
	Good	266	0.02	1.01	0.06			

Levene test statistic: Information Provision = 0.63, df = 2, 434, p = .53; Risk Reduction = 1.36, df = 2,434, p = .57 Graphics = 0.56, df = 2,434, p=.57.

Correlation: Current Account Involvement and Information Search Anticipated Provision

Dimension	r	p
Information Provision	0.00	0.99
Risk Reduction	-0.02	0.65
Graphics	0.06	0.25

Product Behaviour and Account Access

ANOVA: Current Account Understanding and Account Access

Dimension	Ability	n	Mean	SD	SE	F	df	Sig.
Transaction Support	Average	63	0.02	1.08	0.14	1.80	2,432	.17
	Better than average	95	0.17	0.98	0.10			
	Good	277	-0.06	0.99	0.06			
Learning Environment	Average	63	-0.06	1.15	0.14	0.76	2,432	.47
	Better than average	95	-0.10	0.89	0.09			
	Good	277	0.04	1.01	0.06			
Risk Reduction	Average	63	-0.26	1.19	0.15	1.87*	2,124	.13
	Better than average	95	0.05	1.18	0.12			
	Good	277	0.05	0.84	0.05			

*Welch F statistic

Levene test statistic: Transaction Support = 1.00, df = 2, 432, p = .37; Learning Environment = 0.24, df = 2,432, p = .78. Levene test statistic was significant for Risk Reduction = 7.19, df = 2,432, p=.00, in this instance the Welch F-statistic was used.

ANOVA: Current Account Ability and Account Access

Dimension	Ability	n	Mean	SD	SE	F	df	Sig.
Transaction Support	Average	71	0.05	1.03	0.12	2.29	2,426	.10
	Better than average	89	0.19	0.96	0.10			
	Good	269	-0.07	0.99	0.06			
Learning Environment	Average	71	-0.13	1.04	0.12	1.28	2,426	.28
	Better than average	89	-0.09	0.93	0.10			
	Good	269	0.05	1.02	0.06			
Risk Reduction	Average	71	-0.02	1.23	0.15	0.89*	2,128	.41
	Better than average	89	-0.12	1.21	0.13			
	Good	269	0.06	0.81	0.05			

*Welch F statistic

Levene test statistic: Transaction Support = 0.64, df = 2, 436, p = .53; Learning Environment = 0.05, df = 2,436, p = .95. Levene test statistic was significant for Risk Reduction = 8.00, df = 2,436, p=.00, in this instance the Welch F-statistic was used.

Correlation: Current Account Involvement and Account Access Anticipated Provision

Dimension	r	p
Transaction Support	0.00	.99
Learning Environment	0.06	.26
Risk Reduction	-0.01	.78

Bank Web Site Use and Information Search

T-Test: Bank Web Site Visitor and Information Search

Dimension	Visitor	n	Mean	SD	SE	MD	t df	Sig.
Information Provision	Yes	397	0.01	0.98	0.05	0.11	0.64	.52
	No	40	-0.10	1.21	0.19		435	
Risk Reduction	Yes	397	0.07	0.95	0.05	0.55	3.35	.01
	No	40	-0.47	1.23	0.19		435	
Graphics	Yes	397	0.03	1.01	0.05	0.10	0.55	.58
	No	40	-0.07	1.00	0.16		435	

Correlation: Year of First Use and Information Search Anticipated Provision

Dimension	r	p
Information Provision	-0.06	.24
Risk Reduction	-0.04	.50
Graphics	-0.11	.04

ANOVA: Previous Account Access and Information Search Dimensions

Dimension	Frequency	n	Mean	SD	SE	F	df	Sig.
Information Provision	Not at all	29	-0.04	1.12	0.21			
	1-3 times	17	0.19	1.16	0.28			
	4-6 times	10	0.28	0.97	0.31			
	7-9 times	18	0.04	1.12	0.26			
	10-12 times	22	-0.03	0.98	0.21			
	More than 12 Times	297	-0.02	0.96	0.06	0.32	5,387	.90
Risk Reduction	Not at all	29	-0.74	0.88	0.16			
	1-3 times	17	0.06	1.04	0.25			
	4-6 times	10	-0.16	0.48	0.15			
	7-9 times	18	0.07	0.86	0.20			
	10-12 times	22	-0.22	0.80	0.17			
	More than 12 Times	297	0.19	0.95	0.05	5.10	5,387	.00
Graphics	Not at all	29	0.39	1.29	0.24			
	1-3 times	17	-0.09	1.00	0.24			
	4-6 times	10	-0.22	1.11	0.35			
	7-9 times	18	-0.02	0.67	0.16			
	10-12 times	22	-0.32	0.51	0.11			
	More than 12 Times	297	0.03	1.02	0.06	2.23*	5,42	.07

*Welch F statistic

Levene test statistic: Information Provision = 0.68, df = 5,387, p = .64; Risk Reduction = 1.21, df = 5,387, p = .32. Levene test statistic was significant for Graphics = 3.66, df = 5,387, p = .00, in this instance the Welch F-statistic was used.

ANOVA: Search Frequency and Information Search Dimensions

Dimension	Qualification	n	Mean	SD	SE	F	df	Sig.
Information Provision	Not at all	38	-0.26	1.02	0.17			
	1-3 times	141	-0.13	0.96	0.08			
	4-6 times	97	0.08	1.01	0.10			
	7-9 times	34	0.04	1.17	0.20			
	10-12 times	17	0.41	0.85	0.21			
	More than 12 Times	59	0.21	0.89	0.12	2.23	5,380	.04
Risk Reduction	Not at all	38	-0.19	1.02	0.17			
	1-3 times	141	0.19	0.96	0.08			
	4-6 times	97	0.09	0.86	0.09			
	7-9 times	34	0.09	0.90	0.15			
	10-12 times	17	0.29	0.93	0.23			
	More than 12 Times	59	-0.07	1.06	0.14	1.451	5,380	.21
Graphics	Not at all	38	-0.06	1.05	0.17			
	1-3 times	141	0.18	1.10	0.09			
	4-6 times	97	-0.10	0.90	0.09			
	7-9 times	34	0.14	1.10	0.19			
	10-12 times	17	-0.21	0.94	0.23			
	More than 12 Times	59	-0.06	0.87	0.11	1.35	5,380	.24

Levene test statistic: Information Provision = 1.26, df = 5,380, p = .28; Risk Reduction = 0.64, df = 5,380, p = .67, Graphics = 1.71, df = 5,380, p = .13

Bank Web Site Use and Account Access

T-Test: Bank Web Site Visitor and Account Access

Dimension	Visitor	n	Mean	SD	SE	MD	t df	Sig.
Transaction Support	Yes	399	0.01	0.98	0.05	0.11	0.46	.64
	No	38	-0.07	1.19	0.19		435	
Learning Environment	Yes	399	0.02	0.99	0.05	0.34	2.00	.05
	No	38	-0.32	1.13	0.18		435	
Risk Reduction	Yes	399	0.05	0.91	0.05	0.58	2.22	.03
	No	38	-0.53	1.59	0.26		40	

Correlation: Year of First Use and Account Access Anticipated Provision

Dimension	r	p
Transaction Support	0.03	.59
Learning Environment	-0.13	.00
Risk Reduction	0.05	.29

ANOVA: Account Access and Account Access

Dimension	Frequency	n	Mean	SD	SE	F	df	Sig.
Transaction Support	Not at all	28	-0.12	0.93	0.18			
	1-3 times	16	0.26	0.77	0.19			
	4-6 times	10	-0.20	1.04	0.33			
	7-9 times	16	-0.05	0.93	0.23			
	10-12 times	22	-0.02	0.82	0.17			
	More than 12 Times	303	0.03	1.01	0.06	0.44	5,389	.82
Learning Environment	Not at all	28	-0.23	1.19	0.23			
	1-3 times	16	-0.13	0.96	0.24			
	4-6 times	10	-0.13	0.62	0.19			
	7-9 times	16	0.32	0.77	0.19			
	10-12 times	22	-0.16	0.68	0.14			
	More than 12 Times	303	0.05	1.02	0.06	0.94	5,389	.46
Risk Reduction	Not at all	28	-1.10	1.58	0.30			
	1-3 times	16	0.18	1.03	0.26			
	4-6 times	10	0.57	0.43	0.13			
	7-9 times	16	0.04	1.54	0.38			
	10-12 times	22	0.28	0.70	0.15			
	More than 12 Times	303	0.11	0.71	0.04	5.41*	5,65	.00

*Welch F statistic

Levene test statistic: Transaction Support = 0.35, df = 5, 389, p = .88; Learning Environment = 1.12, df = 5,389, p = .35. Levene test statistic was significant for Risk Reduction = 13.55, df = 5,389, p=.00, in this instance the Welch F-statistic was used.

ANOVA: SEARCH FREQUENCY AND ACCOUNT ACCESS

Dimension	Qualification	n	Mean	SD	SE	F	df	Sig.
Transaction Support	Not at all	38	-0.01	1.14	0.19	1.78	5,383	.10
	1-3 times	142	-0.12	0.97	0.08			
	4-6 times	99	0.15	0.92	0.09			
	7-9 times	33	-0.18	1.14	0.20			
	10-12 times	18	0.33	0.77	0.18			
	More than 12 Times	59	0.18	0.92	0.12			
Learning Environment	Not at all	38	-0.29	1.18	0.19	1.50*	5,178	.20
	1-3 times	142	0.13	1.06	0.09			
	4-6 times	99	0.01	0.94	0.09			
	7-9 times	33	0.11	1.14	0.20			
	10-12 times	18	0.11	0.96	0.23			
	More than 12 Times	59	-0.13	0.63	0.08			
Risk Reduction	Not at all	38	0.02	1.20	0.19	1.16*	5,102	.58
	1-3 times	142	-0.05	1.06	0.09			
	4-6 times	99	0.07	0.84	0.08			
	7-9 times	33	0.25	0.52	0.09			
	10-12 times	18	0.17	0.60	0.14			
	More than 12 Times	59	0.11	0.68	0.09			

*Welch F statistic

Levene test statistic: Transaction Support = 1.20, df = 5, 383, p = .31; Levene test statistic was significant for Risk Reduction = 3.70, df = 5,383, p = .00, and Learning Environment = 2.51, df = 5,383, p = .03 in these instances the Welch F-statistic was used.

T-Test: Task Risk and Task Intention Risk Dimensions And Search Intention

Dimension	Task	n	Mean	Mean Diff	SE	t	Sig.
Psychological Risk	Unlikely	140	3.70	-0.70	0.10	-7.34	.00
	Likely	322	4.40			210	
Convenience Risk	Unlikely	140	3.65	-0.75	0.10	-7.85	.00
	Likely	321	4.40			214	
Financial Risk	Unlikely	140	4.11	-0.54	0.08	-6.48	.00
	Likely	321	4.65			202	
Physical Risk	Unlikely	142	3.68	-0.70	0.11	-6.66	.00
	Likely	320	4.38			208	
Performance Risk	Unlikely	140	3.81	-0.59	0.09	-6.64	.00
	Likely	320	4.40			224	

Appendix XII Database of Selected Online Banking Studies

Author	Date	P	Model	Research Design	Sample Characteristics
Akinci et al	2004	UI	None Given	Inductive Quantitative Online survey T-Tests	Random Sample 140 University Staff Turkey
Albesa	2007	DoI	DoI	Deductive Quantitative Face to Face Survey CFA	Intercept – Branch 440 Bank customers Spain
Al-Hawari	2005	ED	Service Quality	Deductive Quantitative Face to face survey SEM	Intercept – Street 442 General public Australia
Awamleh & Fernandes	2005	ED	Satisfaction	Inductive Quantitative Employee Survey EFA Linear Regression	Convenience 49 Online bankers UAE
Awamleh & Fernandes	2006	UI	DoI & TAM	Deductive Quantitative Class Survey T-tests Linear Regression	Convenience 238 Students UAE
Bauer & Hein	2006	UI	Own	Deductive Quantitative Non-given Multinomial Logistic Regression	Secondary Data Not given US
Bauer et al	2005	ED	Service Quality	Inductive Quantitative Online Survey EFA & CFA	Self-select 280 online bankers Germany
Benamati & Serva	2007	DoI	Unclear	Inductive Qualitative Interview Thematic Analysis	Not Given 4 interviews USA
Bhattacharjee	2001	ED	Satisfaction & TAM	Deductive Quantitative Online Survey SEM	Convenience 122 Bank Customers USA
Black et al	2001	DoI	DoI	Inductive Qualitative Focus Group Thematic Analysis	Convenience 71 bank customers with Internet access UK
Broderick & Vachirapornpuk	2002	ED	Service Quality	Inductive Qualitative Critical Incidence	Convenience Online Bulletin Board 160 Incidents UK
Chau & Lai	2003	UI	TAM	Deductive Quantitative Class Survey SEM	Convenience 167 Students Hong Kong
Cheng et al	2006	UI	TAM & Extension	Deductive Quantitative Postal Survey SEM	Random 212 Business Bankers Hong Kong
Devlin & Yeung	2003	ED	Satisfaction	Inductive Quantitative Face to face survey EFA Linear Regression	Judgmental 3804, Financial services customers UK
Durkin	2004	DoI	Driver's typology of decision making styles	Inductive Quantitative Survey EFA Cluster Logistic Regression	No details 480 bank customers UK

Durkin	2007	UI	None	Quantitative Non-given Logistic Regression	Non-given 480 Bank customers UK
Durkin et al	2007	UI	None	Deductive Quantitative Non-given Logistic Regression	Stratified 2118 Bank customers UK
Durkin et al	2008	DoI	None	Deductive Quantitative Non-given Logistic Regression	Non-given 480 Bank customers UK
Eriksson & Nilsson	2007	ED	Satisfaction & TAM	Deductive Quantitative Postal Survey SEM	Stratified Random 1,831 Online Bankers Estonia
Eriksson et al	2005	UI	TAM & TRUST	Deductive Quantitative Postal Survey SEM	Stratified Random 1,831 Online Bankers Estonia
Flavian et al	2006	DoI	Unclear	Deductive Quantitative Face to face survey EFA Logistic regression	Not known 633 bank customers Not known
Floh & Treiblmaier	2006	UI	None	Deductive Quantitative Postal Survey SEM	Random sample 2075 Online Bankers Austria
Gan et al	2006	ED	Unclear	Deductive Quantitative Postal survey Logistic Regression	Random 529 Population New Zealand
Gerrard & Cunningham	2003	DoI	DoI	Deductive Quantitative Face to Face Survey T-tests	Intercept – Street 240 Population Singapore
Gerrard et al	2006	UI	TAM & DoI	Inductive Quantitative Face to Face Survey Chi-square	Intercept-Social Centre 127 Bank customers, Singapore
Guerrero et al	2007	DoI	None	Deductive Quantitative Questionnaire Face to Face Latent Class Regression	Secondary Data Eurobarometer Panel 16,059 consumers Europe
Guriting & Ndubisi	2006	UI	TAM	Deductive Quantitative Questionnaire Face to Face Multiple Regression	Intercept Branch 133 Internet users Borneo
Heaney	2007	DoI	Generation X & Generation Y	Deductive Quantitative Class Survey Cross Tabulation T-tests	Convenience 350 Students Australia
Heinonen	2007	ED	Gronroos	Inductive Qualitative Individual interview Conjoint Analysis Thematic analysis	Purposive 77 Online bankers Finland

Hernandez & Mazzon	2007	UI	DoI & TAM & TPB & TRA	Deductive Quantitative Face to Face Survey Logistic Regression Linear Regression	Intercept –branch 150 Internet/Non IB 150 Non Internet/Non IB Brazil
Hitt & Frei	2002	DoI	None Given	Deductive Time Series Logistic Regression	Convenience 274,000 Bank Customers US
Howcroft et al	2002	DoI	DoI	Inductive Quantitative Postal Survey Cross-tabs Chi-square	No details 286 Population UK
Ibrahim et al	2006	ED	Service Quality	Inductive Quantitative Postal Survey EFA	Random Sample 135- Bank Customers UK
Jahangir & Begum	2008	UI	TAM	Deductive Quantitative Survey SEM	Not given 227 Online bankers Bangladesh
Jaruwachirathanakul & Fink	2005	UI	TPB	Deductive Quantitative Questionnaire Postal survey ANOVA & T-tests	Convenience 506 company employees Thailand
Jayawardhena	2004	ED	Service Quality	Inductive Quantitative EFA & CFA	List-based 426 Online bankers UK
Johnson	2007	UI	Trust	Deductive Quantitative Postal Survey CFA SEM	Convenience 834 Credit union members who use both online & offline channels USA
Johnson et al	2008	ED	Mick & Fournier	Deductive Quantitative Postal Survey CFA SEM	Convenience 834 Credit union members who use both online & offline channels USA
Joseph & Stone	2003	ED	Service Quality	Inductive Quantitative Face to face survey EFA	Intercept - Street 175 Online bankers
Joseph et al	1999	ED	Service Quality	Inductive Quantitative Face to Face Survey EFA ANOVA	Intercept- Street 300 e-bankers Australia
Joseph et al	2005a	ED	Service Quality	Inductive Quantitative Face to Face Survey Mean scores	Intercept- Street 175 Bank customers US 198 Bank customers UK US & UK
Joseph et al	2005b	ED	Service Quality	Inductive Quantitative Face to Face Survey EFA	Intercept- Street 175 Bank customers US 198 Bank customers UK US & UK
Jun & Cai	2001	ED	Service Quality	Inductive Qualitative CIT	US online discussion forum 704 comments US
Karjaluo et al	2002	UI	TAM & Externals	Inductive Quantitative Postal Survey SEM	Convenience 1,167 Bank customers Finland

Karjaluoto et al	2002	UI	Unclear	Inductive Quantitative Postal Survey Correlation	Convenience 349 Non-users 344 New users 474 Users Finland
Kassim & Abdulla	2006	ED	Mukherjee & Nath	Deductive Quantitative Class Survey CFA&SEM	Convenience 276 MBA students Qatar
Katuri & Lam	2007	UI	Unclear	Deductive Quantitative Face to face Survey Linear Regression	Intercept-Branch 100 Credit Union Customers USA
Kim	2005	ED	Satisfaction	Inductive Quantitative Online Survey EFA Linear Regression	Intercept – Web 465 Internet Shoppers & Students Korea
Kolodinsky et al	2000	DoI	DoI	Inductive Quantitative Telephone Survey Logistic Regression	Panel 1,000 Households USA
Kolodinsky et al	2004	DoI	DoI	Deductive Quantitative Longitudinal Telephone Survey Probit	Panel 500 Households USA
Kuisma et al	2007	DoI	DoI	Inductive Qualitative Interview Means End	Convenience 30 non-users Finland
Laforet & Li	2005	UI	Unclear	Inductive Quantitative Face to face survey Chi-square, correlation, t-test	Intercept -Street 128 General public China
Lai & Li	2005	UI	TAM	Inductive Quantitative Class Survey SEM	Convenience 247 Students Hong Kong
Lassar & Dandapani	2003	ED	Service Quality	Deductive Quantitative Experiment ANCOVA	Convenience 471 Students USA
Lassar et al	2005	UI	TAM	Deductive Quantitative Online Survey Logistic Regression	Convenience 349 MBA students USA
Lee et al	2003	DoI	DoI	Deductive Quantitative Telephone Survey Probit	Random Sample 890 Account holders USA
Lee et al	2005	DoI	DoI	Deductive Quantitative Online Survey Multinomial Logit	Secondary Data 1,355 Internet Users USA
Li & Worthington	2004	DoI	Unclear	Deductive Quantitative Linear Regression	Secondary Data Not clear
Liao & Cheung	2002	UI	TAM & Service Quality	Deductive Quantitative Survey mode not given EFA Linear Regression	No details 323 Internet Users Singapore
Liao & Cheung	2008	ED	TAM & Satisfaction	Inductive Quantitative Survey Linear Regression	Not Given 182 Online Bankers Hong Kong

Liao et al	1999	UI	TPB & DoI	Deductive Quantitative Postal Survey EFA Linear Regression	Convenience 118 professionals Hong Kong
Lichtenstein & Williamson	2006	DoI	DoI	Inductive Qualitative Interview Grounded Theory	Purposive 32 Population Australia
Littler & Melanthiou	2006	DoI	DoI (Risk)	Inductive Interviews Thematic coding	Intercept- Street 5 IB users & 5 IB non users 150 Population UK
Maenpaa	2006	ED	Service Quality	Inductive Quantitative Face to face survey Cluster analysis	Quota 300 Online Bankers Finland
Maenpaa et al	2006	ED	Service Quality	Inductive Quantitative Face to face survey Cluster analysis	Quota 300 Online Bankers Finland
Maenpaa et al	2008	DoI	Unclear	Inductive Quantitative Face to face survey EFA ANOVA	Quota - Panel 300 Online bankers Finland
Maltby et al	2003	DoI	Gender & Information Processing	Inductive Quantitative & Qualitative Online Survey EFA	Convenience 450 Students UK
Mattila et al	2003	DoI	DoI	Inductive Quantitative Postal Survey EFA Chi square	Convenience 220 Bank customers 65 & Finland
Mattsson & Helmersson	2005	DoI	Own	Inductive Web survey & Interview CIT	Convenience 117 New Online Bankers Denmark
Mavri & Ioannou	2006	UI	TRA & Service Quality	Inductive Quantitative Postal & Online survey Logistic regression	Random 350 Population Greece
McKechnie et al	2006	UI	TAM	Deductive Quantitative Telephone Survey SEM	Stratified random sample 150 Online bankers 150 telephone bankers UK
Mols	1998	UI	Unclear	Deductive Quantitative Online Survey Correlation	Systematic Sampling 669 Internet Users Denmark
Morrison & Roberts	1998	DoI	DoI	Inductive Quantitative Class survey Perceptual Maps	Convenience 120 students USA
Mukherjee & Nath	2003	ED	Own	Deductive Quantitative E-mail Survey SEM	Quota 510 Internet Users India
Ndubisi & Sinti	2006	DoI	DoI	Deductive Quantitative Online Questionnaire Multiple Regression	Convenience 346 New groups members Malaysia

Ndubisi	2007	UI	TAM	Deductive Quantitative Questionnaire Face to Face Multiple Regression	Intercept-Branch 133 Internet Users Malaysia
Nor & Pearson	2007	DoI	DoI	Deductive Quantitative Class Survey SEM	Convenience 817 ,MBA students (non-users) Malaysia
Patricio et al	2003	ED	Service Quality	Inductive Qualitative Content analysis	Stratified sample 200 Bank customers Portugal
Pikkarainen et al	2004	UI	TAM & Extension	Deductive Quantitative Face to Face Survey ANOVA Correlation	Intercept Street 268 Population Finland
Polatoglu & Ekin	2001	ED	Satisfaction & DoI	Inductive E-mail Survey Factor & Cluster Analysis	Convenience 114 Internet Users Turkey
Poon	2008	DoI	Unclear	Inductive Quantitative Face to face Survey ANOVA	Intercept –Branch 324 Bank customers Malaysia
Ramaswami et al	2000	ED	MOA	Deductive Quantitative Postal Survey SEM	Panel 154 households who rely on a financial advisor USA
Rugimbana	2007a	DoI	DoI	Inductive Quantitative Class Survey Discriminant	Convenience 292 Students Malaysia
Rugimbana	2007b	DoI	Triandis	Inductive Quantitative Class survey EFA Discriminant analysis	Convenience 235 Students Australia
Sarel & Marmostein	2003	DoI	DoI	Inductive Qualitative Focus Group Thematic analysis	Convenience 114 Internet users USA
Sathye	1999	DoI	DoI	Deductive Quantitative Postal Survey Chi-square	Random 324 Business consumers 265 Personal consumers Australia
Shamdasani et al	2008	ED	Service Quality	Deductive Quantitative Online Survey SEM	Convenience 224 Online Bankers UK
Shergill & Li	2005	DoI	None	Inductive Quantitative Face to face survey ANOVA	Intercept- Street 203 online bankers New Zealand
Shih & Fang	2006	UI	TRA	Deductive Quantitative Face to Face Survey SEM	Intercept- Branch 425 Bank customers Taiwan
Siu & Mou	2002	ED	Service Quality	Inductive Quantitative Face to Face Survey EFA ANOVA	Intercept – Branch 195- Online Bankers Hong Kong

Siu et al	2004	ED	Service Quality	Deductive Quantitative Face to Face Survey SEM	Intercept – Street Quota 305 Internet Users
Smith	2006	DoI	None	Deductive Quantitative Face to face survey EFA & cross tabs	Convenience 322 employee interviews US
Sohail & Shaikh	2008	ED	Service Quality	Inductive Quantitative Distributed survey EFA	Convenience Snowball 260 Online bankers Saudi Arabia
Suh & Han	2002	UI	TAM & Trust	Deductive Quantitative Online Survey SEM	Convenience 845 Online Bankers Korea
Suh & Han	2003	UI	TAM & Trust	Deductive Quantitative Online Survey SEM	Intercept -Web 502 Online Bankers Korea
Sukkar & Hasan	2005	UI	TAM	Inductive Quantitative Face to face survey Correlation	Convenience 52 Students Jordan
Sundarraaj & Wu	2005	UI	TAM	Deductive Quantitative Questionnaire Class Survey SEM	Convenience 99 Students Canada
Tan & Teo	2000	UI	TAM & DoI	Deductive Quantitative Online Survey, Linear Regression	Intercept -Web 454 Internet Users Singapore
Thornton & White	2001	UI	Unclear	Deductive Quantitative Postal survey ANOVA	Cluster Sample 801 Credit Union customers (only 10 online bankers) Australia
Waite & Harrison	2002	ED	Service Quality	Inductive Quantitative Class Survey EFA	Convenience 253 Students UK
Waite & Harrison	2004	ED	Service Quality	Inductive Quantitative Class Survey EFA	Convenience 100 Students UK
Waite	2006	ED	Service Quality	Inductive Quantitative Postal Survey T-tests	Convenience 160 Population UK
Walker & Johnson	2005	DoI	Unclear	Deductive Quantitative Face to Face Survey Chi-square	Intercept – Street 180 Population Australia
Wan et al	2005	UI	TRA & Service Quality	Inductive Quantitative Face to face & telephone survey CFA Correlation	Intercept – Street Random -Telephone 314 Bank customers Hong Kong
Wang et al	2003	UI	TAM & Extension	Deductive Quantitative Telephone Survey SEM	Convenience 123 Bank customers Taiwan
Weir et al	2007	UI	TAM	Deductive Quantitative Experiment ANOVA	Stratified random 182 Banking customers UK

White & Nteli	2004	ED	Service Quality	Inductive Quantitative Trade-off Analysis Cluster Analysis	Convenience 56 Online Bankers UK
Winklhofer et al	2003	UI	Shim	Inductive Quantitative Telephone Survey Linear Regression	Stratified random 150 Online bankers 150 telephone bankers UK
Yang et al	2004	ED	Service Quality	Inductive & Deductive Content Analysis Quantitative Online Questionnaire SEM	9 consumer websites 235 Online Bankers
Yiu et al	2007	UI	TAM & DoI	Deductive Quantitative Telephone Survey T-tests & Correlation	Random 150 Account & PC holders, Hong Kong

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ADDENDA

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III Waite, K. and Harrison, T. (2004), "Online Banking Information: What We Want and What We Get", *Qualitative Market Research: An International Journal*, Vol. 7, No. 1, pp 67-79.

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“Following the Yellow Brick Road” - Young Adults' Experiences of the Information Super-highway

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Abstract

This paper uses the metaphor of the movie classic the Wizard of Oz to represent the online experiences of young adults. Just like the twister that turns Dorothy's world upside down the internet has arrived to transform our black and white lives into the Technicolor hyper-reality of the Land of Oz. What are the consequences for young Dorothies of today when they explore the Yellow Brick Information Superhighway? Phenomenologically informed qualitative research was used to explore the internet experiences of older adolescents and young adults. The findings identify, financial, temporal, social, logistical and emotional barriers and indicate that although the internet is an intrinsic facet of young adults' lives, it falls well short of an obsession. The implications are that marketing practitioners need to pay closer attention to the genuine fears and concerns directed at the internet rather than assuming that young adults responses are enthusiastic and positive.

Key Words: Internet, Marketing Communications, Consumer Behaviour, Youth Lifestyles, Youth Marketing, UK.

"The Land of OZ"

The aim of this paper is to explore the realities that exist in the internet experiences of young adults. The findings are presented using the metaphor of Dorothy's fictional journey through the Land of Oz as depicted in the 1939 MGM musical "The Wizard of Oz" (Altman, 1987). Dorothy engages simultaneously in "a journey, a quest and an adventure" (Nallon, 1993). She is seeking information from the Wizard on how to return to Texas. However as she follows the Yellow Brick Road she gains friends (The Lion, The Tin Man and The Scarecrow) and before she can return home she has to acquire a broomstick from the Wicked Witch of the West.

Becker (1986) states that "using a metaphor is a serious theoretical exercise in which you assert that two different empirical phenomena belong to the same general class, and general classes always imply a theory". Metaphors also play a key role as a means of "representing and addressing an unknown field on the basis of an analogy with a more familiar field" (Palmer and Dunford, 1996). Dorothy travelled to Oz when a tornado or "twister" literally turned her world upside down; similarly the internet has been viewed as a transforming technology that will revolutionise the world (Leonard, 2000).

This paper examines the experiences of young adults as they travel along the Information Superhighway just as the film follows Dorothy's journey along the Yellow Brick Road in search of the wonderful wizard whose magic will return her home. As Dorothy undertakes her journey she has to contend with many obstacles and at one stage she voices her fear of "Lions and tigers and bears – Oh My!" This paper will explore young adults' perceptions of the barriers that they encounter

online. It presents the theory that these barriers can be conceptualised as financial, temporal, logistical, social and emotional and that they broadly correspond with the barriers encountered by adults.

The Internet Twister

It is argued that the internet and the young people that utilise it to the full will revolutionise the world. For example, Bill Gates has characterised young adults growing up with the internet as “Generation I”; a generation whose lives will be transformed as they adopt the new medium to access people, products and information (Leonard, 2000). Loader (1998) argued that the internet will alter every lifestyle facet including patterns of work and leisure, entertainment, consumption, education, political activity, family experience and community structures. As early adopters of new technology, young people are also viewed as the defining users of the digital media revolution. Tapscott (1998), who coined the term 'N-Geners' to include anyone currently aged four to twenty four, described the phenomenon as 'the louder echo' stating that "for the first time in history, children are more comfortable, knowledgeable and literate about an innovation central to society". He suggested that through the use of digital media, the N-Generation will "develop and superimpose its culture on the rest of society". Indeed, authors such as Klein (2000) suggest that the internet is increasingly being used to resist the prevailing institutions and offer an alternative cultural capital.

Young adults are an important topic for research. Four main reasons can be identified for the importance of an on-going youth research agenda within the sphere of marketing and commerce. First, the life stage from adolescence to early adulthood

when young people seek to establish their own individual personas is a period of great transition with the formation of behaviour patterns, attitudes and values and hence the formation of consumption patterns (Fannin, 1984; Holbrook, 1989). Indeed many of these patterns are carried well into individual's lifetimes (Moschis and Moore, 1979). Second, young people are increasingly able to influence the purchase and decision making of others given their increased independence and consumption sophistication (Loudon, 1984; Zollo, 1995). Third, young people act as a barometer of social change in terms of their impact on society and surrounding culture (Widdicombe and Woffitt, 1995). Davis (1990) reinforced this by arguing that cultural changes emanating from young adults are in time found within mainstream adult culture. Finally, the 'youth market' is an extremely attractive one to commercial companies because of the reasons mentioned above and the relatively high disposable expenditure consumed by today's young adults.

Recent government statistics indicate that penetration of the internet by young adults is significant in the UK. The Office for National Statistics (2001) National Statistics Omnibus showed that 88% of those aged 16-24 have accessed the internet at some time; this represented a significantly higher level than of any other age group. In addition, the amount of young adults' time spent online continues to rise and the gender gap is closing (Hammond *et al*, 2000). On the other hand, recent empirical research questions the notion that the internet has become a universal obsession amongst young people (Byfield, 2000; Wyatt, 2000). This suggests that hyper-reality does not always match up to the hype as many young people have found to their annoyance and sometimes cost. Although they continue to participate in

increasing numbers it is in a way that falls a long way short of a lifestage or lifestyle obsession.

There is a lack of empirical research into adolescent and young adults' internet experiences. Existing studies seek to explain the attraction of the medium to young adults and categorise usage activity. For example, Lin (1993) suggested that young adults would be attracted to the internet by a greater entertainment gratification, gained through the increased control offered by the technology. Moreover, Chou (2000) suggested that the most powerful predictor of young internet addiction was the communication pleasure score. Usage activity was investigated by Teo (2001) who found that younger users tend to engage in messaging and downloading activities to a greater extent than older users whilst La Ferle *et al* (2000) concluded that entertainment and educational attributes were most important to teenage internet users when comparing differing media choices.

Currently in the UK the requirements for internet connectivity include access to computing equipment, time to learn the required skills and sufficient funds to pay for telephone access. Previous research studies have identified several barriers to internet adoption and usage amongst adults. Katz and Aspden (1997) found that barriers to internet usage amongst US adults were; cost, not knowing how to use, difficulty to access, too complicated to use and discomfort with sitting at a computer. In a later study into internet usage for banking in Australia, Sathye (1999) found that barriers to internet usage were security, lack of awareness of benefits, price, difficulty in use, resistance to change and no internet access. Hammond *et al* (2000), in a UK study amongst users and non users, found that factors that stimulated usage included; an interest in technology; an interest in the benefits of usage, particularly

information/time saving benefits; favourable attitudes towards technology and a preference for informational television programmes. All of these studies focused primarily on the adult population. There is therefore limited research into the barriers that are diminishing young adults' online experiences.

Specifically this study is directed at answering the following questions:

- Which factors do young adults report as stimulating their usage of the internet?
- What are the barriers to internet usage encountered by young adults?
- How do these barriers differ from those of adult users?
- What do young adults perceive as the unattractive features and benefits of the internet
- What changes would they like to see?

Methodology

Our interest lies at the older end of Tapscott's spectrum. We are most concerned with the period of life in which young people become increasingly responsible for their own independent affairs; financially, materially and arguably mentally. Therefore our sampling frame, defined in strict demographic terms is 15-24 year olds (Moschis and Moore, 1979). In recognition of the life changes that take place within this definition, the research will contrast the views of older adolescents who still attend school and live at home (aged 15-17), with younger adults who have left home and are currently attending higher education (aged 18-24).

The research findings are a combination of two independent preliminary research studies carried out by the authors and both are designed to establish the key

dimensions of youth experiences of internet adoption and use. The studies were exploratory in nature, a process that Robson (1989) describes as finding out "what is happening, seeking new insights, asking questions and assessing phenomena in a new light".

In contrast to much of the current empirical work carried out on consumer behaviour and the internet, experiential qualitative data collection was chosen for both research studies. Burns (1989) quoted in O'Donohoe (2001) summed up qualitative research as "experiencing the experiences of others". Our intentions were similar in nature; to discuss first hand types of experiences, uses and consequent behaviours exhibited by young people in relation to the internet.

To this end, our overall guiding methodology for both research studies was based on principles of phenomenology. This interpretative approach encourages the researcher to explore the participant's "lived in experiences" (Thompson and Haytko, 1997). Phenomenology requires the researcher to suspend all ontological judgements in order to gain "common sense and practical reasoning" using language as the central medium (Goulding, 1998). The method also emphasises putting the experiences of the participant's foremost (Thompson *et al*, 1989) thereby enabling "real life", first hand stories and narratives to be accessed. Given the dynamic and at times complex nature of young adults' lifestyles, phenomenology is an ideal framework to explore the depth of meaning required to gain a meaningful understanding. Although phenomenology is an emerging research method in the discipline of Marketing, its use is by no-means unprecedented in the field of e-commerce consumption (see Gould and Lerman, (1998) for example).

The data collection instruments chosen for the exploratory studies were variants on the qualitative focus group technique. Focus group techniques dovetailed with our desire to achieve greater depth and breadth of information than individual interviews could hope for (Morgan, 1997). Focus groups can also offer the security of being in a group situation, particularly where participants are relatively homogeneous, thereby reducing feelings of intimidation which can occur in individual interview situations (Krueger, 1994). This is particularly pertinent when conducting youth research.

For the younger research study (participants aged 15-17), we utilised mini groups (usually involving three to four participants). This encouraged social interaction whilst still exploring individual comments and interpretations in greater depth than large groups would allow (Robson, 1989). The sampling strategy was self selecting, designed so that each group contained 'friendship triads', whereby each participant is on a friendship status with the other members of the group. This was used to minimise peer pressure (Krueger, 1994), which can threaten to suppress naturalistic feedback, particularly in more sensitive schools research. Smaller sized groups also allowed for discussion of topics that might normally be evaded (Barbour and Kitzinger, 1999). Three mini group interviews were held in South West Scotland in November 2001. Discussions were typically one hour in length, to allow sufficient time for detailed feedback whilst fitting in with the scheduling of surrounding classes.

For the older research study (participants aged 18-24), the group size increased to four or five individuals. This was designed to reflect the increased sophistication and maturity we expected from older respondents. It thus allowed for a wider range of views whilst still conscious of the overall guidelines of youth research which

advocate smaller group size. Given the older age of the participants, it was decided that there was no need for a sampling strategy based on existing friendship structures and so a convenience sampling strategy was adopted for the research. Two focus groups were conducted in March 2001 at the participants' place of study in Scotland.

A key aspect of the method was to encourage respondents to describe their own experiences of using the internet in their own words. The participants largely set the course of the dialogue with few *a priori* questions concerning the topic. The desire was for the interviewer to be "a non directive listener" (Thompson *et al*, 1989), ensuring equality amongst participants and allowing for a wholly naturalistic account of their experiences.

Research Findings - "Somewhere over the rainbow, skies are blue"

Just as Dorothy dreams of a place where she can escape to, away from the problems at home, so too do older teenagers. They use the Internet to escape from times of boredom, a place to go "when there was nothing else to do". Rubin (1981) referred to this as habitual gratification, namely something to do to pass the time. The internet is viewed by participants as an escape valve, offering the solution to occasional boredom and offering a window of escapism whereby users can lose themselves in a virtual world, at the touch of a button.

"Sometimes when I have got nothing to do and the internet is there. So it's just click and off I go." (P, Male 15-17)

One of the most frequently cited motivations for logging on was to establish and maintain communication with friends and family, allowing an escape from loneliness

and boredom and to keep important social networks going. Participants indicated that they had set times of the day when they knew that others would be online to respond to and so it became a habitualised part of their social lives. Rubin (1981) highlighted the ability of media to "talk with other people about what's going on" whilst Svennevig (2000) suggested that one underlying motivation may be to share experiences and ideas with others.

"I always check my mail after dinnertime just before I do some work or go out. And it's usually at night-time - that's usually when a lot of other people are on." (L, Female 15-17)

Clearly, given that our sample is drawn from those who are still in education, the need to use the internet for academic purposes is frequently cited (La Ferle, 2000). However, the internet also plays an important role in escaping not just boredom, but the demands of academic study. Escapism can be manifested in usage behaviour that allows the individual to escape from conformity of everyday routines. One older female participant talked about physical freedoms and sense of comfort when using the internet.

"I think at home its more convenient time wise than at the university. You don't have to put your clothes on to go, you know you get changed and have shower and go out. So if you just feel at 3am you want to go on the Internet you don't have to go to an Internet cafe if you have it in the house." (S, Female 18-22)

This reflected what Venkatesh (1998) called the "consumer freedoms ... and free abandon" in relation to virtual shopping.

In the land over Dorothy's rainbow " troubles melt like lemon drops". Similarly young adults in both age groups valued using the internet as a place which helped them resolve decision-making problems they encountered in the real world. Internet information allowed them to compare prices and for increase their knowledge of product offerings.

"Finding these goods and services on the Internet, I just want to make sure that I know how much they really cost and whatever I am looking for when I go to the shop and talk about it I am not getting ripped off or that I do not know anything about it." (TK, female 18-22)

The internet was perceived to remove the restrictions of cost, time and place when communicating and seeking information. The younger age group emphasised the fact that the internet was "more interesting" and a "lot different" than other media and that there still existed a novelty factor in the technology. In both groups, the universality of the internet was emphasised and the fact that its versatility met many needs.

"Just the fact that you can find absolutely anything on it. Anything you need, it will be on there." (P, male, 15-17)

It is clear that for the young adults interviewed the internet had many representations; it was viewed as a problem-solving resource; a place for making friends and as a source of stimulation.

"Lions and tigers and bears. Oh my!..."

As her journey progresses Dorothy enters The Dark Wood and she articulates her fear of "Lions and tigers and bears". This research asked young adults to describe

the barriers they encountered whilst using the internet. These can be conceptualised as financial, temporal, social, logistical, and emotional. Emotional responses can be further classified as fear (which can be sub-divided into security and privacy fears), anger over invasion of junk-emails and online advertisements and distrust of interacting with a non-human. Adult barriers tend to revolve around issues of security, payment policies, cost, and difficulties of access (Hoffman *et al*, 1998; Katz and Aspden, 1997). Few researchers have focused on the barriers associated with intrusive marketing activity.

Financial Barriers

There was evidence that the younger age group, who access the internet more often at home, are aware of financial barriers (reflecting parental concerns). They reported that their usage usually took place at “off peak times” and in short bursts that rarely last more than an hour; one younger female participant recalled that

"I usually go on if I have got time after tea - short ten or fifteen minutes" (S, female, 15-17)

For the older age group, usage was not restricted due to the availability of free university access. This resulted in different internet behaviour where the internet was used at certain times for specific activities.

“You’ll take e-mails in the morning, write a project in the afternoon, then use it for leisure activities in the evening” (K, male, 15-17)

Several of the older age group stated that once free access was denied then they expected to change their usage patterns dramatically. They were convinced that the internet was not yet irreplaceable in their lives and personal usage could alter once

'normal' adult conditions apply. The issue of cost clearly grows in importance with increased financial responsibilities and age; Katz and Aspden (1997) highlighted cost as the most frequently cited obstacle for adult internet usage.

Temporal

It was noticeable that the younger age group felt that the amount of time that they personally were willing to spend online was limited and that they struggled to fit the internet around their many other activities. They also reported it as “time-wasting” and found it boring if used excessively. Again, the tendency was to use it in short bursts.

“I just never really got into it since it started. I think it was because I was too busy doing other things. Like playing sport or going out and I didn't have time to sit down and look at web sites and all the rest of it.” (J, male 15-17)

This contrasted with some of the older participants who used it as a background to other activities and remained online for extended periods of time.

“I actually have a 24 hour connection at home and just sit there and have everything open, e-mail and sms's and chat rooms and what I'm actually researching and everything that's going on between the different things.” (D, male, 18-22)

In both age groups, speed of use was related to satisfaction.

“It's slow because there are so many people on it at the moment. Especially with AOL, it takes me absolutely forever sometimes so I just end up switching it off because I can't be bothered waiting for it to load up.” (D, female, 15-17)

Bruce (1999) noted that the internet is often referred to using the analogy of travel or road system, citing references to an information infrastructure (Dempsey, 1993; Kahin, 1995), an infobahn (Mitchell, 1995), an information superhighway (Koelsch, 1995) and a communication superhighway (Hearn *et al*, 1998). This representation of the internet has increased consumer expectations of quick, customised and effective communication (Van Doren *et al*, 2000). Participants in the older age groups shared strategies as to how they could increase the speed of their internet activities. There was also evidence of knowledge and expectations that the internet will become faster to use. `

Both sets of groups reported that pop-up adverts prevented them from efficiently accessing information, relating instances of “mouse-trapping” where a programme disables the back button on the web browser so that is impossible to return to the previous site. It was felt that internet advertising was not effective and that users had learnt to ignore it or discount it. This type of behaviour was consistent with the findings of Dreze and Hussherr (1999) who found that surfers purposely avoid online (banner) adverts.

“So I think that is the reason why it doesn’t really work is that people are so used to it - I mean the novelty of it, of advertising, wore off a long time ago so people just now are more focussed on what they are actually doing on a particular site and thus ignore advertising.” (K, male, 18-22)

However one participant in the older group felt that advertising in this way was acceptable because of the associated cost-benefit trade off.

“If you want to keep the internet free you have this. It is through this advertising that they get the funds.” (M, male, 18-22)

Existing research into adult views of online advertising remains inconclusive. Schlosser and Sharritt (1999) found equal numbers liking, disliking and feeling neutral about online ads whilst Bruner and Kumar (2000) suggested that positive associations grew with greater web experience. However, recent qualitative research by Rettie (2001) found adult users found internet advertising "extremely annoying".

Social

The younger age group reported a conflict over phone usage highlighting that using the internet for prolonged periods of time cut them off from their friends and also caused problems with their parents. The lack of two lines in the family home remains an obvious barrier to usage. For the older age group, phone line conflicts with families appeared to be resolved but were replaced by conflict with flatmates.

“We just all kind of share that one connection and do all our stuff. There are loads of points of contention because you have to fight to get on as well.” (D, male, 18-22)

Logistical

The location of the computer was a factor in determining usage patterns. For the younger participants, access was from the home in the majority of cases. School access was mentioned in the context of “classwork” use. Within the home the computer was located in either the bedroom, the study, the office or in the living room. Where the machine was located in a bedroom the participant felt a greater sense of ownership and this resulted in heavier access. Where it was in a shared

space or an office or studies, patterns of access were more limited. This was illustrated when a participant described what happened when the computer was moved from his bedroom.

“Other people have been using it more since it got moved downstairs. When it was in my bedroom, I used to just always use it when I wanted to. Since it got moved I haven't used it as much, other people having been using it more. In my bedroom, I used to be able to use it when I wanted to. But now as it's downstairs, I barely use it at all.” (A1, Male, 15-17)

In the older age group there were fewer comments about the specific location of the machine. A contrast was made between home and university use when considering cost of use but access problems were not reported. Domestic location appears to be an issue unique to the younger users and ties in the findings of Livingstone and Bovrill (1999) on conflicts over private versus public space in relation to new media.

Emotional

Fear of lack of Privacy

Lack of privacy was expressed as a barrier to full usage by both sets of groups. Privacy fears included the fear of being watched and the invasion of privacy, caused by intrusive marketing initiatives.

“There is always the chance that somebody is watching what you are doing. I don't know how they do it.” (L, female 15-17)

“When you are logged onto the internet they are loads of other people who try to get into your computer and like monitor you.” (TK, Female, 18-22)

Anger at Invasion of Privacy

In addition to the fear of lack of privacy, participants reported their anger at receiving unsolicited e-mails.

“I just tend to ignore it but when its actually targeted towards you then I think there is big issues of morality, invasion of privacy. I don’t like it all, I don’t like people knowing exactly. I feel quite paranoid that I might go I don’t know into a company’s web site Morgan Stanley or something like that I did actually receive an e-mail from them, a targeted e-mail saying we see you are interested in this do you that we also do this and I think “No this is not good”.” (D, male, 18-22)

The issue of fears over privacy is well documented by Hoffman *et al* (1998). Wang *et al* (1998) called for a more consumer orientated privacy model to help "re-dress the balance and prevent users building up resentment of corporate marketing activity".

The response by users was either to delete the e-mail or sometimes to set up a “false” identity.

“The thing to do there is to have multiple e-mail addresses ..I have another one that I never even look ...I never look at it so any junk gets thrown into this chasm and never seen again.” (D, male, 18-22)

Firat and Venkatesh (1995) referred the use of multiple identities blurring "the real and the unreal", between the real existence and an unreal hyper-reality (Gould and Lerman, 1998). This suggests that such practices have escapist gratifications, not just from the efforts of marketers, but from the realities presented by modern daily life.

Fear of lack of Security

Amongst the younger participants, security fears (often influenced by parental concerns) were mentioned as restricting online purchasing behaviour. However in the older age group some participants were minimising the extent of their security fears saying that they did not have that much that could be stolen (reflecting their student status) and that they equated the same risk to using the phone.

“I know that some people are worried about giving their details online but at the end of the day my argument is that you give people your details over the phone and anyone can listen in there as well. So I don’t really have a problem with the whole security thing of the internet.” (A, female, 18-22)

Distrust of the Non-Human

Fears of dealing with a non-human were also observed, especially in connection with online purchasing. This concurred with worries over mistakes in processing, problems over fulfilment of orders and a general concern about a lack of human skills involved in the online purchase processing.

“You do want to know that someone is there, you are not alone sort of thing. That someone is actually interested in. That if you have a question they are going to answer it.” (L, female, 18-22)

At the heart of many of the mentioned fears is what Hoffman *et al* (1998) referred to, in an adult context, as "consumers simply not trusting most web providers enough to engage in relationship exchanges". Internet providers have not been able to reassure users sufficiently to allay the natural emotional concerns that young people possess.

Confidence

However despite these barriers, the participants interviewed perceived themselves to be more advanced than their parents in their internet usage, in line with the assertions of Tapscott's n-Gen. The younger age group shared the same experiences and in several cases acted as tutors to their parents. This suggests an increasingly sophisticated, if unconvinced and sceptical audience.

Behind The Wizard's Curtain

In order to gain her passage home Dorothy has to bring the Wicked Witch's broom stick to the Wizard at this point Dorothy's dog pulls away a curtain exposing a white-haired, ordinary man who is controlling all the Wizard's special effects in the projected image. The young adults in this study described how they viewed online special effects as disguising the internet's short-comings.

“(They) try to lure consumers by doing fancy online things. Because there are just somethings that no matter how technical no matter how good it gets informing the consumer it just doesn't work.” (K, male, 18-22)

Young consumers highlighted how the internet failed to deliver on its promises, and in particular, low cost. There was consensus that the Internet provided access to “hard to find” goods but there was disagreement over whether it offered lower prices:

“It maybe cheaper than the base price but when you add on the Internet price and the postage and that, then it does get dearer.” (B, Male, 15-17)

Issue was also taken as to whether the internet could actually replace the high street shopping experience. Internet shopping was characterised by one younger male

participant as “shopping at its lowest form”. Another sceptical female preferred the traditional pleasures of high street shopping.

“I prefer to go to the shops. And like get out, into the fresh air rather than be inside and kind of claustrophobic. But I would rather get out and walk and go for a wander around shops.....I would rather go hunting...”(J, female, 18-22)

Kaufmann (1999) found that, in an adult US context, one quarter of all Web shoppers were found to be dissatisfied with their shopping experiences. Aware that technology is outpacing demand, our participants highlighted a general concern over the development of the internet.

“I think a real problem with the internet now is that a lot of companies do things that are technically possible but not actually useful to people”(K, male 18-22)

“I think it is going too fast in that they are forgetting the fundamentals (they) ...need to consider what consumers want not what they are willing to put out on the internet site.” (L, female 18-22)

The desire amongst young people was for the internet to deliver on its current promises, not simply to create and heighten new expectations.

Discussion and Conclusions: “There’s No Place Like Home”

These findings indicate that the internet is very much part and parcel of young people's lifestyles. It offered a number of expected uses and gratifications, ranging from escapism to entertainment to a source of communication and community. It was also widely used for information sourcing and in some cases, purchasing.

However this research also suggests that the internet does not dominate young adults' lives in the way that reflects the level of hype. For many participants it was a shoulder activity, adjacent and often secondary to more important activities and goals. These patterns of consumption are consistent with the conclusions of Livingstone and Bovrill (1999) that young people are assimilating new media into the structure of their lives but "it rarely alters their ways of living".

The findings also highlight that young adults' enthusiasm and belief in the internet is adversely affected by a number of factors. Beyond the disappointment that expectations do not match up to experiences (constrained by financial and social barriers) the problems created by increasingly aggressive online marketing efforts should be of most concern to marketing practitioners. A level of consumer frustration leading to cynicism is evident, arguably undermining the best efforts of online marketing communications strategies, and in particular online advertising, viral marketing and associated e-mailing practices. The fact that young people are recognised as sophisticated decoders of communication and advertising (O'Donohoe and Tynan, 1998) can only reinforce such barriers as methods of evasion become more complex. Young people may be 'net literate' but this does not seem to translate into 'net advocates', given their concerns. Each barrier in isolation may not be enough to quell their level of enthusiasm for the internet. However, it is the combination of many barriers that we have identified that seeks to put doubt in the minds of the user and dispels the notion of the internet as the revolutionary 'holy grail'. Although, internet usage statistics may be rising indicating the internet is being assimilated into everyday life, it does not follow that levels of penetration translate into a universal enthusiasm for the channel.

A number of academics have now started to highlight this ambivalence towards internet use. The futura.com project (Byfield, 2000) and the work of the ESRC's Virtual Society? (Wyatt, 2000) both question the notion that the Internet has become a universal obsession. Svennivig (2000), from a media consumption perspective, found that there has not been an "unequivocal shift in time use amongst P.C. users and Internet users away from T.V. viewing".

These findings underline that the ever upward assumptions of internet consumption are not to be taken for granted. The research suggests that young adults are beginning to look beyond the technology and that they, just like Dorothy's dog, are pulling away the curtain of the booth, revealing the levers that control the Wizard's special effects. Just as Dorothy discovered that the Wizard was an ordinary man so too are young adults' discovering the corporate interests that are shaping their hyper-reality. Young people are not passive receivers of unsolicited e-mails and marketing activity, they react to the perceived growing perceived intrusion with active rejection.

The implications for marketers working in an online environment are significant. Young people are their current and future prospects and carry adolescent attitudes and consumption behaviour forward in life, (Moschis and Moore, 1979). The internet is used for many marketing activities, from establishing new relationships to extending consumer loyalty. This research suggests that practitioners need to give greater thought on how to strengthen, not weaken mutual relationships with young adults' online. No doubt some barriers will diminish in size as the technology develops, the online experience improves and the costs reduce. However, there will still remain potential conflict between the internet as the 'personal space' of its users and the internet as a 'corporate tool'.

A key component of the acceptability of online activity is trust. Hoffman *et al* (1998) concluded that "the most effective way for commercial web providers to develop profitable exchange relationship with online customers is to earn their trust". Although brand owners may be aware of issues to do with security/privacy (Bush *et al*, 1999), there is little sign here that those fears are being addressed and the young people in this study related their fear and anger at the invasion of their privacy by advertisers. Trust can only be rebuilt if consumers expectations are met, not undermined (Bauer *et al*, 1999). This issue should be particularly important given that it has been suggested that the internet is increasingly perceived as "a potential substitute or complement for all the major categories of existing media" (Silk *et al*, 2001).

This paper concludes that young adults are realising that the internet is not able to meet their expectations and are clicking on "Exit". We have shown that the internet plays a wide and varied role in young adults' lifestyles. We have witnessed many barriers that may explain why the internet has not become the one universal 'hub' of their lives. Their expectations in many cases did not live up their lived in reality.

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Analysis papers

Consumer expectations of online information provided by bank websites

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Abstract Information search has been identified as the primary reason for Internet use in the UK. It is, therefore, important that companies understand the information requirements of consumers in order to ensure website effectiveness in aiding consumer decision making. This paper explores factors contributing to customer satisfaction and dissatisfaction with current online information provision by retail banks. The research consisted of a two-stage method involving focus groups and a quantitative questionnaire survey of young adult Internet users. Two hundred and fifty three usable questionnaires formed the basis of the quantitative analysis. Factor analysis identified seven key underlying expectation dimensions. An analysis of the most and least important attributes revealed that those contributing to decision-making convenience are preferred over the technological entertainment value of the site. The results provide an indication of the website features and design most likely to attract and retain customers.

Keywords Information search, consumer behaviour, financial services, Internet

INTRODUCTION

According to the Office for National Statistics (2001),¹ information search is the primary reason for Internet use in the UK: 73 per cent of adults surveyed who had used the Internet reported the main purpose as 'finding information about goods or services'. Developments in Internet technology have transformed an originally limited medium to one that has

the potential to provide consumers with information quantity and quality in an easily accessible form.² A growing number of companies have invested in a corporate website to communicate their marketing messages: 63 per cent of UK businesses have their own or third party websites.³ Consequently, there has been increased competition among companies to attract and retain website customers. Understanding the needs of consumers in

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terms of information requirements is paramount to assessing website effectiveness.

Assessing the effectiveness of websites in respect of information provision, however, has presented a number of challenges for researchers. For example, Berthon *et al.* (1996)⁴ argue that the traditional models of advertising are inadequate in this context since they have been developed from the study of controlled exposure situations to mass media. In addition, Dreze and Zufryden (1998)⁵ contend that adapting traditional measures such as reach and frequency has proved difficult due to the measurement shortcomings of the medium: hit rate figures are insufficiently robust and provide limited insights into behavioural issues. Moreover, Ducoffe (1996)⁶ notes that websites are often a 'seamless interweave of editorial and commercial information' resulting in a lack of distinction between advertising and content for the consumer.⁷ As a result of these problems, it has been argued that there is a need for research that assesses the effectiveness of the Internet from the perspective of the recipient of the marketing communication.^{4,6}

This study aims to explore the factors contributing to customer satisfaction and dissatisfaction with current online information provision. The two specific objectives of the paper are:

- to examine consumer expectations of financial services information provided online through bank websites
- to identify underlying dimensions that can be used to explain customers' expectations of such services.

The results provide an indication of website features and design that are most likely to attract and retain target customers.

Retail bank websites were selected as the subject of inquiry for several reasons. First,

Internet use is the highest among the finance and insurance sectors: over 70 per cent of businesses have their own or third-party websites.¹⁰ Secondly, the financial services sector is interesting as a result of broader trends that are occurring with respect to distribution and delivery: traditional channels, such as branches, are being displaced by the Internet and other remote forms of contact. Thirdly, financial services purchases often present difficulties for consumers, not only because the products themselves are often difficult to understand and assess but also because information is frequently only available via an intermediary or presented in ways that make comparisons between products hard to achieve.^{8,9} Finally, information search is recognised as an important first stage in the process of full-service adoption. In a recent *Financial Times* survey, the deputy managing director of an Internet bank described Internet banking customers in the form of a pyramid with the apex comprising those who use the Internet for all online transactions and the base representing information hunters.¹⁰

This paper is presented in three main sections. The first section outlines the importance of information to consumer decision making and includes a discussion on the Internet as a source of information which argues that there is a need for consumer-orientated research. The second section describes the research methodology utilised and reports on the findings of the study. The third section discusses the implications of these findings and draws conclusions for practitioners and academics.

IMPORTANCE OF INFORMATION TO CONSUMER DECISION MAKING

Information search is an influential stage in the consumer decision-making process: consumers use information to decide whether to purchase or re-purchase a product or service. Information is defined

as relevant data about choice alternatives. Data becomes information because they are relevant to the consumer engaged in decision making.¹⁴

The rationale for information search behaviour is that consumers view purchase transactions as risky. This perceived risk has been defined as a two-dimensional construct comprising the uncertainty involved in the purchase decision and the consequences of taking unfavourable action.¹² The utility of information relates to its usefulness in reducing the amount of perceived risk and uncertainty involved in conducting the transaction under consideration. The greater the level of perceived risk, the more information will be required until perceptions reach levels acceptable for the consumer.¹³

Yet, it is acknowledged that there is a cost to acquiring information. Bakos (1997)¹⁴ defines this as the opportunity cost or time spent searching by the buyer as well as associated expenditures on telephone calls, visits, literature costs etc. Processing information may also present an additional cost. Simon (1955)¹⁵ refers to this as the 'cost of thinking', which depends on the similarity and complexity of product alternatives available. As a consequence of these costs, Stigler (1961)¹⁶ argues that the consumer will continue to search for information until its value becomes smaller than the cost involved in obtaining it.

The extent of information search will be affected by a number of factors particular to the market environment, situational variables, product importance, knowledge and experience of the buyer as well as a whole host of individual differences. Research into these determinants has often revealed inconclusive and contradictory findings. For example, Staelin and Payne (1979)¹⁷ contend that high numbers of alternatives and high levels of product complexity will, in fact, lead to limited search activity because the 'cost of

thinking' increases. Furthermore, Brucks (1985)¹⁸ shows that high levels of product familiarity and knowledge actually increase information-seeking behaviour.

The extent of search activity is also related to product type. For example services, including financial services, are commonly viewed as being high in experience and credence factors, due to their characteristics of intangibility and degree of customisation.^{9,19} Consequently, consumer decision making in a services context is believed to be complex and carries a higher perception of risk. This has been argued to lead to extended search behaviour.²⁰ Yet Venkatraman and Dholakia (1997)²¹ contend that experience qualities increase the search costs since in order to acquire information on experience qualities purchase and consumption must take place. Hence, they conclude that, for services, the amount of pre-purchase search would be limited.

Research has shown that there is a relationship between the level of perceived risk and preference for a source of information.^{12,22} As risk increases, consumers are more likely to seek information from interactive and personal sources.²³ Word-of-mouth communication has been noted as an important information source in the purchase of financial services.²⁴ In these situations, information is based on the second-hand experience of others who are trusted as a credible source of information.

Information format also affects the way consumers acquire and process information. Search activity is either inhibited or reinforced by the control the consumer can exert over information flow as well as consumer perceptions of the medium. External information search costs are reduced if information is easily accessible and easy to process. For example information listed at a single location enables easy comparison.³⁵ Consumers who have control over information flow can

ensure their needs are met, allowing for a deeper level of information processing.

When the provision of information is inadequate, there are implications both at an individual and a systemic level. For example uninformed consumers are vulnerable to exploitation or mis-selling: inefficient information distribution reduces price competition, increases seller market power and increases the opportunity for exorbitant profits. On the other hand, uninformed consumers may mis-buy products, making inefficient or even harmful choices.²⁶ When information is difficult to acquire and process, individuals often do not spend enough time gathering information in order to make a fully informed decision.³⁷ Finally, information enables the formation of trust which in turn reduces uncertainty and introduces predictability and stability in the functioning of markets.^{28,29} In the absence of trust the marketplace becomes dysfunctional and transactions will only take place under a series of rules and regulations that have to be negotiated, agreed to, litigated and enforced.³⁰

Banks (2001)³¹ notes that ‘... consumer financial decision making relies on a core of information ... and they [consumers] must have access to this information on a timely and regular basis’. These issues have resulted in information provision and consumer education becoming a subject of public policy. The Financial Services and Markets Act (2001)⁹ has a statutory objective of consumer education through ‘promoting public understanding’. In addition, the Government’s White Paper ‘Modern Markets: Confident Consumers’ emphasises the need for good, reliable information to be widely available.³²

The Internet as a source of financial services information

The Internet has several advantages as an information source. First, it provides

accessibility to information: search engines simplify and reduce the time and effort related to search activity. Also, ‘search agents’ increase the consumer control and automation of search activity encouraging extended search behaviour.^{33,34} Secondly, the Internet provides complete availability: it is a virtual medium, without physical form. Thirdly, it is conducive to interactivity, enabling two-way communication and providing greater consumer control over the speed and sequence of information. Research by Ariely (2000)³⁵ shows that these characteristics improve the quality of decision making over time. Fourthly, the Internet is dynamic, offering the potential of limitless information that can be updated and amended easily and speedily. Finally, the Internet offers multimedia friendliness through the provision of graphics, text, sound and video, making information attractive as well as useful to the user.

Financial services websites can perform a variety of functions ranging from basic information provision to full transactional capability. Knight *et al.* (1999)³⁶ identify four separate levels of information provision. At the most basic level, an Internet presence merely provides information about the financial institution, with no interaction between the institution and customer other than a possible e-mail link. The next level allows the institution to receive information, such as an electronic loan application. The third level offers the customer the opportunity to share information, such as account balances or transaction details. The highest level identified allows the customer to process information. For example the customer can process transfers of funds between accounts or can make bill payments.

There are a number of claims that the Internet will become a vital source of consumer information^{33,37–39} because it has the potential to reduce the inefficiencies caused by buyer search costs. It has also

been argued that the Internet has the potential to 'redress the knowledge balance' by delivering a more educated consumer.⁴⁰ The assumption is that consumers find the Internet a convenient and effective source of information.

Hoffman and Novak (1996)⁴¹ have noted that the Internet frees consumers from their traditionally passive role as receivers of marketing communications and gives them greater control over the information search and acquisition process. Consumers choose to visit a particular site, to follow links through multiple levels within it, to continue navigating a website or to switch to another site and finally they make the decision to return to the website on future occasions.⁴² Enver (1998)⁴³ states that an understanding of consumer expectations of searching for information online will help in providing better guidelines for designing effective websites.

A review of empirical research into consumer attitudes and experiences of online information provision has revealed that there is a need for research into this area. As a result of the relative novelty of the Internet only a few empirical studies thus far have examined its use for marketing purposes.⁴⁴ Limitations of current studies on the effectiveness of financial services websites are that they focus on transaction capabilities rather than information provision⁴⁵⁻⁴⁷ or employ evaluative criteria that has not been generated by users.⁴⁸⁻⁵⁰ The research contained in this paper explores the way in which consumers evaluate financial services websites, in particular exploring consumer expectations of retail bank websites as an information source.

RESEARCH METHODOLOGY

Data were collected in two stages. In the first stage focus groups were conducted to gain insight into how consumers value the Internet as a source of information.

Findings from two focus groups, each containing six young adults were used to generate a set of evaluative criteria that were grounded in the terms of Internet users rather than practitioners. In the second stage of the research these evaluative criteria were framed as statements of expectation of the features of an excellent bank information website and tested using a questionnaire for their generalisability.

The use of a quantitative instrument permitted exploratory factor analysis to be conducted. The purpose was to compare and group the expectation variables in order to uncover any latent dimensions within the statements derived from the focus group findings. The outcome of factor analysis is the reduction and summary of the data in terms of the common underlying dimensions or factors.⁵¹ In the context of this study, if the factors found were meaningful, these dimensions could then be used to identify comparable constructs in subsequent research and ultimately the final measures could be used as actionable evaluative criteria for website development.

The questionnaire was administered to a convenience sample of students at the University of Edinburgh, selected from the population of first year undergraduates. It is acknowledged that the results of this study are not generalisable to the UK population: students represent a distinct segment with somewhat limited financial requirements, which is likely to result in their information needs being more confined than those of financial consumers in general. Resource limitations, however, plus the exploratory aim of the study to test research techniques prior to undertaking a larger more representative survey, underpinned the decision to focus on students as the subject of enquiry.

Despite apparent limitations, students are a subject of research interest since they form part of the 16-24-year-old age group

that comprises the largest group of Internet users in the UK.⁵² Moen and Walker (1999)⁵³ state that young adult online information-seeking behaviour is an overlooked area of research. They argue that, as young adults gravitate towards the Internet as a primary source of information, research is needed to explore and identify information-seeking behaviours.

In addition, Lewis and Bingham (1991)⁵⁴ contend that due to their future earning potential students form an attractive target market for banks and building societies. Jayawardhena and Foley⁵⁰ note that Internet access is still predominantly limited to more affluent categories of the population, particularly in the UK where Internet access requires high initial outlay and comparatively high monthly bills for telephone connection charges. They note that students represent a large proportion of the low-earner segment of users but that 'on entering the job market these individuals are likely to earn above average salaries and are likely to remain connected to the Internet'.

Closed and open-ended questions were included in the questionnaire to collect both standardised responses⁵⁵ and unanticipated responses.⁵⁶ The questionnaire contained a set of 30 statements, derived from the focus group discussions, about possible attributes and features relating to information provision by a bank website. Participants were asked to indicate on a five-point Likert scale the extent to which they agreed or disagreed that they would expect these features to be present on a bank website that was excellent in terms of information provision. They were then asked to indicate five expected features in order of most importance and five statements in order of least importance. This follows the recommendation by Joseph *et al.* (1999)⁴⁵ that it is vital to investigate not only the expectations themselves but also consumer

perceptions of the importance of these expectations.

RESULTS

A total of 297 questionnaires was distributed to students and 253 usable questionnaires were returned, giving a response rate of 85 per cent. This response was considered adequate for an exploratory factor analysis of 30 variables since the required ratio is four to five respondents per variable, giving a minimum of 120–150 responses.⁵¹

Exploratory factor analysis

Seven factors with an eigenvalue greater than 1 were identified accounting for 61 per cent of the variance before rotation. The factor analysis comprised of principal axis factoring and orthogonal rotation. Items were selected which had a correlation greater than 0.3. This resulted in items being unique to each factor. Table 1 lists the items under each factor together with the rotated factor score, the eigenvalue, the percentage of the variance explained and the reliability measure computed using Cronbach's Alpha. The alpha score for all 30 variables analysed was 0.9010. Alpha scores above a threshold of 0.7 are considered reliable,⁵¹ therefore four of the seven factors can be considered as internally reliable. The table shows the items that were excluded as a result of a correlation coefficient less than 0.3. These items are italicised and were excluded from the reliability tests.

The factors were labelled after an examination of the variables with the higher loadings and with consideration of the focus group responses to reflect the qualitative dimensions of this technique.^{51,57} For example Factor 1, 'transaction technicalities' reflects the comments made by the participants on their concerns regarding the delivery of a

Table 1 Exploratory factors

	<i>Rotated score</i>	<i>Eigen value</i>	<i>% explained</i>	<i>Alpha</i>
Factor 1 Transaction technicalities		9.531	31.79	0.8718
Have details of when bank charges apply	0.817			
Have details of bank charges	0.809			
Have details of overdraft facilities	0.584			
Have details of how to transfer money between accounts	0.545			
Have details of how to pay money in	0.488			
Have daily information updates	0.295			
Factor 2 Decision-making convenience		1.898	6.325	0.8637
Be easy to use	0.812			
Be quick to download	0.697			
Have details of current interest rates being offered	0.588			
Have details of special packages available for students	0.581			
Have details of security arrangements for online banking	0.515			
Have details of competitors' interest rates	0.482			
Have sufficient online information to decide to purchase a service online without getting more information from elsewhere	0.290			
Factor 3 Interactive interrogation		1.748	5.828	0.7568
Have contact details for complaints	0.726			
Have the facility to send in questions by e-mail	0.702			
Have a frequently asked questions page	0.447			
Have the facility to order brochures and more detailed information online	0.392			
Factor 4 Speciality information		1.506	5.019	0.9123
Have details of foreign exchange rates	0.820			
Have details of commission charged for foreign exchange	0.810			
Factor 5 Search efficiency		1.334	4.447	0.6519
Have a search engine	0.623			
Have a site map	0.608			
Factor 6 Physical back-up		1.257	4.191	0.5690
Have details of how many bank branches there are	0.730			
Have details of branch locations	0.634			
Have links to other websites such as Which? and other consumer organisations	0.259			
Factor 7 Technology thrill		1.087	3.623	0.5196
Be available in branches via a special terminal	0.489			
Have flashy graphics	0.426			
Have all banking needs included in menu options	0.412			
Have pop-up windows	0.368			
Have an online tutor to explain how to use the website	0.324			
Have a requirement to register before supplying information	0.309			

banking service and the high loadings on the timing and extent of transaction charges. Each of these factors is described in more detail below.

Factor 1. Transaction technicalities

The expectations are for information on the technicalities of frequently conducted transactions. Financial services has been typified as an 'on-going' service encounter

because of these regular transactions between institution and customer.⁵⁸ The prominence given to information on retail banking processes is consistent with previous research,⁵⁹⁻⁶¹ which shows that consumers consistently rank these attributes among the key determinants of bank selection. In the light of this evidence it is to be anticipated that these attributes would be grouped together.

Factor 2. Decision-making convenience

The expectations are for information provided to be easy and quick to access, to be relevant and to enable service comparison. Ease of use and accessibility have been recorded as key satisfiers in previous research into online banking transactions in studies by Jun and Cai (2001)⁴⁶ and Joseph *et al.* (1999)⁴⁵ and more broadly within studies on Internet usage.^{41,62} Therefore it is not surprising that this has been highlighted as one of the key dimensions in this context. It is interesting that in addition to requiring information on financial products tailored to the student market, participants also required information relevant to the medium, namely the security of online transactions. There is evidence that security fears are a significant barrier to online service adoption.⁴⁷ As noted earlier, search activity is influenced by the degree of difficulty and the amount of time taken,^{14,16} therefore the provision of relevant information in a format that enables comparisons to be made maximises the utility of consumer search activity and contributes towards consumer satisfaction. For example, Pereira (1999)⁶³ found that 'well designed query-based decision aids lead to increased satisfaction with the decision process and increased confidence in judgements'. Hence the provision of decision-making environments that reduce the temporal and mental search costs could be an opportunity for service differentiation.

Factor 3. Interactive interrogation

The expectations are for institutional contact details, e-mail facility, a page for frequently asked questions to improve problem-solving efficiency and online brochure ordering. Several comments from the questionnaires emphasised the expectation of a two-way information flow, for example, 'I'd like to have a feeling of interactive communications and

I'm talking to my bank, my financial adviser, rather than just a machine, a monitor'. It has been found that consultation with sales staff is one strategy that consumers use to simplify a complex decision-making environment.⁶⁴ In addition, the responsiveness of personnel is another significant factor used by customers in determining service quality.^{65,66} The interactivity of the Internet has the potential to facilitate communication in this manner. Research by Gallagher *et al.* (2001)⁶⁷ shows that Internet users value the enhanced communication capabilities of the Internet and evaluate websites that do not live up to that expectation more negatively than ones that do.

Factor 4. Speciality information

The expectation is for information that relates to a particular but discrete need ie taking a holiday, as opposed to on-going financial service needs such as a cheque account. In addition to seeking information on a broad level about key processes, participants also seek information about specialised products which are related to a specific situation ie seeking foreign currency in order to go on holiday. This has been termed situational involvement⁶⁸ and contrasted with enduring involvement where the consumer has a continuous interest in the product. This survey was conducted prior to the summer vacation period and hence there might be increased importance for information related to overseas travel finances.

Factor 5. Search efficiency

The expectation is for specific tools to assist the search process ie a site search engine and a site map. Tools such as search engines simplify and reduce the time and effort related to search activity. Search engines allow searching by keyword and a set of categories. For example customers

can use search engines to group products into categories. This defines decision making in a similar way to interrogating advisory staff. In addition the use of search engines further increases consumer control and search activity through automation, since a consumer can select options based on individual preferences thus saving time and energy and encouraging extended search.^{33,34} Jayawardhena and Foley (2000)⁵⁰ suggest that ease of navigation is critical to enhancing customer satisfaction of Internet banking websites.

Factor 6. Physical back-up

The expectations are for information on 'bricks and mortar' channels to back up the virtual market place.³⁸ An examination of the focus group findings showed that websites that were integrated with 'bricks and mortar' activities were valued. This is consistent with research by Enver (1998)⁴³ who conducted a pilot study into searching for a holiday. The findings were that newspapers and magazines provided an inspirational editorial route, the Internet delivered access and convenience, while the High Street could have offered more personal service and insider knowledge, but failed to do so. No route was judged an outright winner or loser but the ability to do background investigation via the Internet followed up by more detailed face-to-face advice was expressed as the ideal.

Factor 7. Technology thrill

The expectations are for terminals to be available in branches, for websites to have flashy graphics, pop-up windows, online tutoring and a requirement for pre-registration before use. These items reflect 'multi-media friendliness' identified by Ainscough and Luckett (1996)³⁷ as an advantage of the medium. The use of colourful graphics and animation give financial institutions the ability to present information in a stimulating and appealing

way. These methods have been shown to increase the likeability of television advertising⁶⁹ and this could have a similar effect in relation to financial services' websites. Several studies discussing the features of successful websites emphasise that providing fun and entertainment is vital and that a colourful design that maximises the enhanced capabilities of the Internet is desirable.⁷⁰⁻⁷² One research participant suggested that these features could be used to attract child accounts by having games and puzzles online.

Internet technology also enables the capture of consumer information that can subsequently be used to improve customer relationship management. Information can be gathered through recording details of the computer being used to access the website and also by asking consumers to register their details online before proceeding further on the site. The ability of a website to accomplish this is also viewed as a key success factor.⁷³ Finally Internet unfamiliarity, resulting in fear of the medium, was discussed in the focus groups and one solution proposed was to have an online tutor. These comments were echoed in a statement on the questionnaire that the 'thought of a computer scares people'.

Importance rankings

Respondents were asked to list the five most important items and the five least important items. There were 229 responses to this question. The frequencies for each variable were calculated as a weighted sum with rank 1 being equal to 5, rank 2 being equal to 4 etc. Those items being ranked as the most important are presented in Table 2 and those ranked the least important are presented in Table 3. The final column gives the number of the factor under which the attribute was grouped.

These results show that all of the top

Table 2 Rankings of most important expected attributes

Most important attribute	Rank frequency					Weighted score	Factor
	1st	2nd	3rd	4th	5th		
Be easy to use	87	37	19	10	4	664	2
Be quick to download	39	36	8	8	13	392	2
Have details of security arrangements for online banking	29	18	19	13	7	307	2
Have details of current interest rates being offered	10	18	22	11	7	217	2
Have details of special packages for students	6	15	15	23	22	203	2

Table 3 Rankings of least important expected attributes

Most important attribute	Rank frequency					Weighted score	Factor
	30th	29th	28th	27th	26th		
Have flashy graphics	55	32	13	19	15	495	7
Have pop-up windows	29	38	27	18	14	428	7
Have a requirement to register online before supplying information	38	19	18	5	6	336	7
Have an online tutor to explain how to use the web site	17	21	21	19	21	291	7
Have links to other web sites such as Which? and other consumer organisations	19	18	19	17	16	274	6

five attributes are found in Factor 2 whereas the bottom four attributes are found in Factor 7. This suggests that decision-making convenience is more important than the technological entertainment value of the site. This supports findings by Raman and Leckenby (1998)⁷⁴ which found that utilitarian aspects of website design were valued more highly by users than hedonic features. The strength of feeling is reinforced by the questionnaire comment that, 'I resent paying bank charges to fund flashy sites that I would not even use'.

DISCUSSION AND CONCLUSION

Thornton and White (1999)⁹⁹ argue that the introduction of new technologies 'is usually guided by management concerns for cost effectiveness and economies of scale while too often little is known about consumer concerns, motives and reactions'. There has been research into customers needs and preferences in relation to conducting banking online^{45,46} but little into consumer expectations for financial

services information provision despite this being an area of public policy. Research by Mysis shows that there is a delay of two years between using the Internet and transacting online and therefore information search is an important and distinct stage worthy of attention.¹⁰ This paper has identified seven dimensions for consumer expectations of bank websites as a source of information:

- 1 Transaction technicalities
- 2 Decision-making convenience
- 3 Interactive interrogation
- 4 Speciality information
- 5 Search efficiency
- 6 Physical back-up
- 7 Technology thrill

It is of value to discuss how these factors compare with other studies. Given the lack of research into consumer expectations of online information provision, the results are compared with those derived from research into online banking satisfaction and service quality, and online banking transactions. This is justified on the

following grounds. First, it is recognised that information search is an initial step towards transacting online. Secondly, the extent to which websites meet consumers' needs for information provision is likely to contribute to their overall satisfaction with the site and their perceptions of service quality. This, in turn, is likely to affect the probability that consumers will transact online.

Research by Joseph *et al.* (1999)⁴⁵ into electronic banking service quality identified the following six factors:

- 1 Convenience/ accuracy
- 2 Feedback/complaint management
- 3 Efficiency
- 4 Queue management
- 5 Accessibility
- 6 Customisation

The study by Jun and Cai (2001)⁴⁶ identified 17 dimensions of Internet banking service quality from which they selected the following six key dimensions:

- 1 Responsiveness
- 2 Reliability
- 3 Access
- 4 Ease of use
- 5 Accuracy
- 6 Product variety/diverse functions

There are three broad areas of similarity between the studies mentioned above and this study into expectations of online information provision. The first area covers online systems quality. In both cases this relates to ease of use, ease of navigation and the speed of access. The implication is that consumers view the Internet as a time-saving medium both for conducting transactions and for seeking information. Features that prevent these time-savings being realised are sources of dissatisfaction. The second area covers online service delivery, whether this is the banking service or the information service.

In this area the studies indicate a need for an accurate, reliable and targeted service. The third area covers interactivity, ie the ability to communicate via the website with bank personnel and to receive quick and efficient feedback on transactions. There is evidence that this area is increasing in importance: respondents in the study by Jun and Cai (2001)⁴⁶ cite failure to respond as the number one source of dissatisfaction.

There are two significant differences between the surveys into online transactions and the current research into information provision. First, attributes listed under the dimension 'physical back-up' are unique to this study. This indicates that whereas consumers who bank online are choosing the medium in preference to other channels and are using it exclusively, those that use the Internet to search for information utilise a combination of channels. There are implications for channel management as consumers make selective and various use of channels to meet different requirements for information and decision-making capability. It is important to understand which channels fulfil consumer information requirements at different decision stages and the contribution of different channels in converting a prospect seeking information into a customer.

Secondly, Factor 7 'Technology thrill', which groups features of website design together, has not been noted in previous research. Furthermore, a large proportion of the attributes listed within this factor are ranked as least important by consumers showing that consumers expect these features to add little value. Previous research by Dholakia and Rego (1998)⁷¹ suggested that the more interactive features a website contained the more effective it would be. The current study provides evidence that consumers value some components of interactive medium (ie e-mail) and not others (ie flashy graphics and

pop-up windows). Jaywardahena and Foley (2000)⁵⁰ note that the utilisation of advanced technological design techniques increases download time and, therefore, militates against one of the most important features which is a quick download. Thus, it may be concluded that in the financial services context an emphasis on features that provide entertainment value is misplaced.

Harrison (2000)⁹ notes that factors effecting service quality can be divided into three categories:

- ‘Hygiene factors’ that represent a minimum level of acceptable service
- ‘Enhancing factors’ that lead to satisfaction, but the absence of which will not lead to dissatisfaction
- ‘Dual threshold factors’ which, if not delivered, will cause dissatisfaction, but if delivered above a certain level can enhance satisfaction.

Those attributes listed within Factor 1, ‘Transaction technicalities’ can be considered as hygiene factors since the literature suggests that consumers expect these as a minimum level of acceptable information provision. The attributes listed within Factor 2 ‘Decision-making convenience’ may be considered enhancing factors. For example Pereira (1999)⁶³ found that research participants who had access to an effective computerised decision aid perceived an increase in cost savings and a lower cognitive decision effort associated with the purchase decision leading to increased satisfaction. Therefore, it is contended that the provision of decision-making environments that reduce the temporal and cognitive search costs could be an opportunity for service differentiation. Factor 7, ‘Technology thrill’ may represent an example of a dual threshold factor, since some elements of interactivity have been shown to enhance customer service, whereas others have been

shown to annoy users and can even have a negative impact on speed of access to information. Hence, it is important that technical features are designed with these issues in mind.

To conclude, a participant summarised his expectations about online information provision as follows:

‘Most importantly bank websites should be functional, simple and easy to use, offer information on detailed products (ie mortgages) and have good customer service which is above all quick in reacting to queries.’

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ONLINE BANKING INFORMATION: WHAT WE WANT AND WHAT WE GET

ABSTRACT

This paper reports on young adults' expectations and perceptions of online retail banking information. A combination of qualitative and quantitative research was used. Focus groups proved valuable in eliciting criteria grounded in the experience of users of bank web sites. The subsequent questionnaire survey allowed the measurement of gaps between perceptions and expectations. The results indicate that respondents expect bank web sites to be easy to use and to provide them with basic account/product details. These features are valued more than the technological aspects. Yet, perceptions of actual information provision differ. While basic account and price information is perceived to be provided, certain features are perceived to be less prevalent rendering bank web sites ineffective at aiding consumer decision-making. The research questions the role of the internet in information provision and suggests how banks can improve their web sites to assist consumer decision-making.

KEYWORDS

Information search, consumer behaviour, banking, internet.

ONLINE BANKING INFORMATION: WHAT WE WANT AND WHAT WE GET

INTRODUCTION

According to the Office for National Statistics (2001a), information search is the primary reason for internet use in the UK: 73% of adults surveyed who had used the internet reported the main purpose as 'finding information about goods or services'. Developments in internet technology have transformed an originally limited medium to one that has the potential to provide consumers with information quantity and quality in an easily accessible form (Wind and Mahajan, 2001). A growing number of companies have invested in a corporate web site to communicate their marketing messages: 63% of UK businesses have their own or third party web sites (Williams, 2001). Consequently, there has been increased competition among companies to attract and retain web site customers. Understanding the needs of consumers in terms of information requirements is paramount to assessing web site effectiveness.

Retail bank web sites were selected as the subject of inquiry for several reasons. First, internet use is the highest among the finance and insurance sectors: over 70% of businesses have their own or third party web sites (Williams, 2001). Second, the financial services sector is interesting as a result of broader trends that are occurring with respect to distribution and delivery: traditional channels, such as branches, are being displaced by the internet and other remote forms of contact. Third, financial services purchases often present difficulties for consumers, not only because the products themselves are often difficult to understand and assess but also because information is frequently only available via an intermediary or presented in ways that

make comparisons between products hard to achieve (Ennew *et al*, 1995 ; Harrison, 2000).

Breitenback and Van Doren (1998) outline the process by which a web site becomes accepted by users, based on work by Walker and Walker (1996) and Rogers (1995) “Diffusion of Innovation” theory consisting of the five stages of awareness, interest, evaluation, trial and adoption. Prior to visiting a web site, individuals mentally consider what they expect from the web site and how the known features will add value; if perceptions are less than expectations then the web site will not be tested or adopted. If, after trial, the reality of using the web site does not match expectations, the user will decide that the web site does not contain features of value and will not continue to use it. Therefore there is a link between customer satisfaction and relationship continuance (Rowley 2001). In addition, Rogers (1995) notes that consumers trial an innovation through low-risk elements that are divisible from the whole. Information is one such element and information search is recognised as an important first stage in the process of full-service adoption. Therefore it is important to ensure that consumers evaluate online information provision positively.

To this end, the research reported in this paper explores the gaps between users’ expectations and perceptions of retail bank web sites as a source of information. The results provide an indication of areas of dissatisfaction and highlight where bank web sites need to be improved in order to be perceived as an excellent information source. The paper is presented in three main sections. The first section outlines the importance of information to consumer decision-making, including a discussion of the internet as an information source. The second section outlines the research methods utilised and reports on the findings of both the qualitative and quantitative

phases of the research. The third section discusses the implications of the findings and draws conclusions for academics and practitioners.

IMPORTANCE OF INFORMATION TO CONSUMER DECISION-MAKING

Information search is an influential stage in the consumer decision-making process: consumers use information to decide whether to purchase or re-purchase a product or service. Information is defined as relevant data about choice alternatives. Data becomes information because it is relevant to the consumer engaged in decision-making (Evans *et al*, 2001).

The rationale for information search behaviour is that consumers view purchase transactions as risky. This perceived risk has been defined as a two-dimensional construct comprising the uncertainty involved in the purchase decision and the consequences of taking unfavourable action (Cunningham, 1967). The utility of information relates to its usefulness in reducing the amount of perceived risk and uncertainty involved in conducting the transaction under consideration. The greater the level of perceived risk, the more information will be required until perceptions reach levels acceptable for the consumer (Newman and Lockman, 1975).

Yet, it is acknowledged that there is a cost to acquiring information. Bakos (1997) defines this as the opportunity cost or time spent searching by the buyer as well as associated expenditures on telephone calls, visits, literature costs etc. Processing information may also present an additional cost. Simon (1955) refers to this as the 'cost of thinking', which depends on the similarity and complexity of product alternatives available. As a consequence of these costs, Stigler (1961) argues that the

consumer will continue to search for information until its value becomes smaller than the cost involved in obtaining it.

The extent of information search will be affected by a number of factors particular to the market environment, situational variables, product importance, knowledge and experience of the buyer as well as a whole host of individual differences. Research into these determinants has often revealed inconclusive and contradictory findings. For example, Staelin and Payne (1979) contend that high numbers of alternatives and high levels of product complexity will, in fact, lead to limited search activity because the 'cost of thinking' increases. Furthermore, Brucks (1985) shows that high levels of product familiarity and knowledge actually increases information seeking behaviour.

The extent of search activity is also related to product type. For example, services, including financial services, are commonly viewed as being high in experience and credence factors, due to their characteristics of intangibility and degree of customisation (Harrison, 2000; Gabbot and Hogg, 1994). Consequently, consumer decision-making in a services context is believed to be complex and carries a higher perception of risk. This has been argued to lead to extended search behaviour (Murray, 1991). Yet, Venkatraman and Dholakia (1997) contend that experience qualities increase the search costs since in order to acquire information on experience qualities purchase and consumption must take place. Hence, they conclude that, for services, the amount of pre-purchase search would be limited.

Financial services are an important product which all economically active individuals are obliged to use (Davies, 1996). Financial "know how" is a critical factor in the purchase of financial products (Harrison, 1997), where customers do not have and do

not wish to develop this “know how” they seek advice. Banks (2001, p.122) notes that “consumer financial decision making relies on a core of information ... and they [consumers] must have access to this information on a timely and regular basis”. Asymmetry of information places the consumer in a vulnerable position: the mis-selling of pensions is one example. In addition, consumer ignorance prevails as a result of financial services being complex and, in many cases, non-comparable (Ennew *et al*, 1995). This has led to the active role of marketing (or ‘sales’) in helping to construct consumer ‘needs’, contrasting sharply with the notion of an active and sovereign consumer.

As a result of these tensions between the patterns of information and advice provision and consumption within the financial services sector, the aim of recent government legislation has been to enhance financial literacy and improve generic advice (Harrison, 2000). Information provision and consumer education are the subjects of recent public policy: the Financial Services and Markets Act (2001) has a statutory objective of consumer education through ‘promoting public understanding’. In addition, the Government’s White Paper ‘Modern Markets: Confident Consumers’ emphasises the need for good, reliable information to be widely available (Department for Trade and Industry, 1999).

The Internet as a Source of Financial Services Information

The internet has several advantages as an information source. First, it provides accessibility to information: search engines simplify and reduce the time and effort related to search activity. Also, ‘search agents’ increase the consumer control and automation of search activity encouraging extended search behaviour (Van Raaij, 1998 ; Russo and Leclerc, 1991). Second, the internet provides complete

availability: it is a virtual medium, without physical form. Third, it is conducive to interactivity, enabling two-way communication and providing greater consumer control over the speed and sequence of information. Research by Ariely (2000) shows that these characteristics improve the quality of decision-making over time. Fourth, the internet is dynamic, offering the potential of limitless information that can be updated and amended easily and speedily. Finally, the internet offers multimedia friendliness through the provision of graphics, text, sound and video, making information attractive as well as useful to the user.

Financial services web sites can perform a variety of functions ranging from basic information provision to full transactional capability. Knight *et al.* (1999) identify four separate levels of information provision. At the most basic level, an internet presence merely provides information about the financial institution, with no interaction between the institution and customer other than a possible e-mail link. The next level allows the institution to receive information, such as an electronic loan application. The third level offers the customer the opportunity to share information, such as account balances or transaction details. The highest level identified allows the customer to process information. For example, the customer can process transfers of funds between accounts or can make bill payments.

There are a number of claims that the internet will become a vital source of consumer information (for example, Van Raaij, 1998; Ainscough and Lockett, 1996 ; Evans and Wurster, 1997 , Rust *et al.*, 1996) because it has the potential to reduce the inefficiencies caused by buyer search costs. It has also been argued that the internet has the potential to 'redress the knowledge balance' by delivering a more educated

consumer (Macintosh, 1997). The assumption is that consumers find the internet a convenient and effective source of information.

A review of empirical research into consumer attitudes and experiences of online information provision has revealed that there is a need for research into this area. As a result of the relative novelty of the internet only a few empirical studies thus far have examined its use for marketing purposes (Mathur *et al*, 1999). Ratchford *et al* (2001) note the absence of research into the choice of the internet as an information source and state that only three papers are closely related to this topic (Alba *et al*, 1997; Bakos, 1997; Lynch and Ariely, 2000). Limitations of current studies on the effectiveness of financial services web sites are that they focus on transaction capabilities rather than information provision (i.e. Joseph *et al*, 1999; Jun and Cai, 2001; Sathye 1999) or employ evaluative criteria that has not been generated by users (i.e. Polatoglu and Ekin, 2001; Mols, 1998; Jayawardhena and Foley, 2000). The research contained in this paper explores how consumers evaluate financial services web sites, investigating in particular consumer expectations and perceptions of retail bank web sites as an information source.

RESEARCH METHODS

Qualitative Phase

Data was collected in two stages: a qualitative stage and a quantitative stage. The purpose of the qualitative phase was to gain insight into how consumers value and evaluate the internet as a source of information. The qualitative data collection instrument chosen was the focus group. This technique provides “data on group interaction, on realities defined in a group context, and on interpretations of events that reflect group input” (Frey and Fontana, 1993). Rogers (1995) proposes that the

adoption process is heavily influenced by word of mouth therefore it was appropriate to utilise group discussion to explore the extremes of views expressed, the interaction between these views and the consensus achieved. In this way focus groups add more depth and provide more breadth of information than an individual interview (Morgan, 1997).

Two focus groups, each comprising six young adults, were conducted. Group 1 comprised 5 females/2 males, and group 2 comprised 2 females/5 males. Participants were recruited from the population of Business Studies students at The University of Edinburgh. The questionnaire survey in the quantitative phase (outlined below) was also administered to a convenience sample of students from the same population. An advantage of recruiting from the population of Business Studies students is the degree of group homogeneity. According to Knodel (1993) it is preferable that participants share key characteristics and identify with each other's experiences. While the focus on students does not make this study representative of all internet users, students are nevertheless a population of research interest. Students form part of the 16-24 year old age group that comprises the largest group of internet users in the UK (Office for National Statistics, 2001b). Moen and Walker (1999) note that young adult online information seeking behaviour is an overlooked area of research. They argue that as young adults gravitate towards the internet as a primary source of information, research is needed to explore and identify information-seeking behaviours. The importance of the student segment to financial services has also been noted (Lewis and Bingham, 1991).

The focus group discussions were transcribed and analysed according to grounded theory. The analysis followed eight key stages. First, the data was searched for

themes relating to the basic research issue. Second, codes were developed for categories and sub-categories of the research issue and themes. Third, using Nudist*4, the data cases were indexed according to the codes developed. Fourth, the data was examined for consistency and accuracy with regards to the coding schema. Fifth, coding refinements were made where necessary. Sixth, interpretations were made. Seventh, explanations were formulated of the phenomena involved. Finally, the whole process was reflected upon to ensure validity and reliability.

The data analysis resulted in a set of evaluative criteria, grounded in the experience of users of bank web sites, that could be explored further in a quantitative study. The criteria derived from the focus groups can be summarised according to Ainscough & Luckett's (1996) five categories: accessibility, availability, interactivity, dynamism and multimedia friendliness (shown in Table 1).

While it would have been desirable to conduct more focus groups, presentation of the findings in this way shows that the responses elicited from the two groups conducted noted the key issues previously identified in the literature. It is not possible to comment on the extra information that might have been obtained from additional groups, although it would appear that that there has been no loss of information compared with previous research.

Table 1 : Summarised Evaluative Criteria Derived from the Focus Groups

Characteristic	Evaluative Criteria
Accessibility	Quick to download Is available in branches via a special terminal Site has a site map Site has a search engine
Availability.	Site has details of security arrangements for banking online. Site has details of how many bank branches there are. Site has details of locations of branches Site has details of current Interest rates being offered Site has details of competitors interest rates Site has details of special packages available for students. Site has details of overdraft facilities Site has details of bank charges Site has details of when bank charges apply Site has details of how to pay money in Site has details of how to transfer money between accounts Site has details of foreign exchange rates Site has details of commission charged for foreign exchange
Interactivity	Site has a frequently asked questions page Site has the facility to send in questions by e-mail Site has contact details for complaints Site has the facility to order brochures and more detailed information online
Dynamism	Site has daily updates Site has all banking needs included in menu options Site has sufficient information to decide to purchase a service without getting more information from elsewhere
Multimedia Friendliness	Site has an online tutor to explain how to use the web site. Site has flashy graphics Site has a requirement to register before supplying information Site links to other web sites such as Which? and other consumer organisations. Site is easy to use Site has pop up windows

Source: adapted from (Ainscough & Luckett, 1996)

Quantitative Phase

For the quantitative phase, a questionnaire was developed containing the thirty statements derived from the evaluative criteria outlined in table 1. The aim of the quantitative survey was to measure the relative importance of the evaluative criteria and identify the extent to which gaps exist in terms of the kind of information people

expect bank web sites to offer and what they perceive is actually offered. Respondents were asked to indicate on a 5-point Likert scale the extent to which they agreed or disagreed that they would expect these features to be present on a bank web site that was excellent in terms of information provision. They were then asked to indicate their perceptions of current bank web sites as a source of general information again using the same thirty statements and five-point Likert scale, thus allowing the gaps between perceptions and expectations to be measured.

The research instrument was informed by the SERVQUAL method, which is based on the “Expectancy-Disconfirmation” model. The “Expectancy-Disconfirmation” model was chosen as it uses the consumer perspective to evaluate performance. The model posits that consumers form beliefs based on prior experience with the product or service and/or communications about the product or service that imply a certain level of quality (Van Raaij, 1991). Consumer satisfaction (or dissatisfaction) is influenced by these prior expectations such that when a product or service fails to meet these expectations dissatisfaction occurs and when it exceeds expectations, satisfaction occurs.

SERVQUAL is a well-established method of measuring the difference between expectations and perceptions and reflects the methodology used by Bruce (1999) within the Information Science discipline. SERVQUAL is also appropriate since information provision is increasingly viewed as a core component of a product or service offering (Freiden *et al*, 1998). It has been argued that information provision is a fundamental component of financial services (Knight *et al*, 1999; Ennew *et al*, 1995).

The questionnaires were distributed to a convenience sample of 297 students, comprising both users and non-users of retail bank web sites. 253 usable questionnaires were returned, giving a response rate of 85%. The number of respondents who had previously visited a bank web site totalled 100. The results presented in this paper are based on the sub-sample of 100 respondents who had prior experience of a bank web site and whose perceptions were based on actual experience.

ANALYSIS AND FINDINGS

Web Site Visitor Expectations

The data were examined in terms of the modal class, the median and the mean. Since “strongly agree” had the highest numerical value (5), ranking the data by mean scores clearly identifies the attributes respondents most expected to be a feature of an excellent bank web site.

Table 2 shows the top two attributes expected to be present are ease of use and the provision of security details for online banking. Details of special packages for students and details of bank charges were ranked equally in third place, and the two attributes jointly occupying the fourth place are the ability to be quick to download and the provision of current interest rates. Thus, it would appear that respondents expect an excellent bank web site to offer both accessible and targeted information (in terms of both customers and products).

Table 2: Expectations Ranked by Mean Score

Expectation	Mean	Median	Mode	Std Deviation
Be easy to use	4.77	5.00	5.00	0.59
Have details of security arrangements for banking online	4.63	5.00	5.00	0.63
Have details of special packages available for students	4.57	5.00	5.00	0.63
Have details of bank charges	4.57	5.00	5.00	0.63
Be quick to download	4.53	5.00	5.00	0.65
Have details of current interest rates being offered	4.53	5.00	5.00	0.58
Have details of how to transfer money between accounts	4.51	5.00	5.00	0.66
Have details of when bank charges apply	4.48	5.00	5.00	0.71
Have the facility to send in questions by E-mail	4.48	5.00	5.00	0.68
Have details of overdraft facilities	4.42	5.00	5.00	0.66
Have contact details for complaints	4.39	5.00	5.00	0.84
Have details of how to pay money in	4.32	5.00	5.00	0.83
Have all banking needs included in menu options	4.27	5.00	5.00	0.83
Have a search engine	4.22	4.00	5.00	0.96
Have a site map	4.18	4.00	4.00	0.78
Have daily updates	4.17	4.00	5.00	0.95
Have details of competitors interest rates	4.15	4.00	5.00	0.97
Have the facility to order brochures and more detailed information online	4.12	4.00	4.00	0.75
Have details of commission charged for foreign exchange	4.09	4.00	4.00	0.86
Have details of foreign exchange rates	4.07	4.00	4.00	0.89
Have sufficient information to decide to purchase a service without getting more information from elsewhere	4.06	4.00	4.00	0.83
Have details of branch locations	3.97	4.00	4.00	0.91
Have a frequently asked questions page	3.76	4.00	4.00	1.15
Be available in branches via a special terminal	3.49	4.00	4.00	0.99
Have links to other web sites such as Which? And other consumer organisations	3.38	3.00	3.00	1.07
Have an online tutor to explain how to use the web site	3.35	3.00	3.00	1.06
Have details of how many bank branches there are	3.25	3.00	3.00	1.12
Have a requirement to register before supplying information	3.15	3.00	5.00	1.50
Have flashy graphics	3.05	3.00	3.00	0.86
Have pop-up windows	2.99	3.00	3.00	1.15

The least important attributes are the bottom three items shown in Table 2, and relate to the requirement to register before being supplied information, flashy graphics and pop-up windows. These attributes contribute to the technological entertainment value of the web site, and generally attracted criticism in the focus groups for being time-wasting and intrusive. This suggests that decision making convenience is more important than the technological capabilities of the site and is consistent with the

findings of Raman and Leckenby (1998) which concluded that utilitarian aspects of web site design are valued more highly by users than hedonic features.

The requirement of consumers to register their details before being supplied information may be perceived as a barrier inhibiting easy access to information. However, responses to this variable were fairly evenly divided with 45.5% either agreeing or strongly agreeing and 40.4% either disagreeing or strongly disagreeing. While some individuals may find the provision of personal details an intrusion of privacy, findings from the focus groups indicated that some participants felt that supplying personal information was a form of payment for free information online. This is consistent with research by Gordon and De Lima-Turner (1997) which found that consumers perceive the supplying of personal information as a fair trade-off for being shown targeted advertisements. The findings could suggest some interesting segmentation issues worthy of further investigation.

None of the variables were consistently valued below 3, indicating that respondents did not wish to reject any feature. This finding is consistent with the suggestion made by Bruce (1999) that the hype characterising the internet as a “Super highway” increases expectations of information quality: in this instance there is perhaps an expectation that an excellent bank web site should not exclude any listed feature, although some features clearly are valued more than others

Web Site Visitor Perceptions

Compared with expectations, consumers perceptions of retail bank web sites as a source of information show some interesting differences (see Table 3). For example, the top five attributes respondents perceived were available consisted of: details of security arrangements, current interest rates, the requirement to register before being

supplied information, ease of use and the ability to send in e-mails to the bank. These can be classed as features that are provider-driven. Thus, respondents generally perceived that basic account and price information was provided and that the web site was easy to use.

Table 3: Perceptions Ranked by Mean Score

Perception	Mean	Median	Mode	Std. Deviation
Have details of security arrangements for banking online	3.90	4.00	4.00	0.97
Have details of current interest rates being offered	3.73	4.00	4.00	1.00
Have a requirement to register before supplying information	3.67	4.00	5.00	1.15
Are easy to use	3.67	4.00	4.00	0.97
Have the facility to send in questions by E-mail	3.60	4.00	3.00	1.10
Have details of how to pay money in	3.58	4.00	4.00	0.99
Have a site map	3.57	4.00	3.00	0.90
Have details of overdraft facilities	3.50	3.50	3.00	0.94
Have a search engine	3.45	4.00	3.00	1.18
Have details of how to transfer money between accounts	3.43	3.00	3.00	1.03
Have contact details for complaints	3.41	3.00	3.00	1.02
Have a frequently asked questions page	3.41	3.00	3.00	1.08
Have details of bank charges	3.39	3.00	3.00	1.07
Have details of special packages available for students	3.33	3.00	3.00	1.05
Have the facility to order brochures and more detailed information online	3.31	3.00	3.00	0.99
Have pop-up windows	3.29	3.00	3.00	0.93
Have all banking needs included in menu options	3.27	3.00	3.00	0.97
Have details of when bank charges apply	3.23	3.00	3.00	1.05
Have details of foreign exchange rates	3.22	3.00	3.00	0.98
Have details of how many bank branches there are	3.21	3.00	3.00	1.04
Have details of branch locations	3.20	3.00	3.00	0.97
Have daily updates	3.19	3.00	3.00	1.01
Are quick to download	3.18	3.00	3.00	1.02
Have flashy graphics	3.12	3.00	4.00	1.12
Have details of commission charged for foreign exchange	3.06	3.00	3.00	0.89
Have links to other web sites such as Which? And other consumer organisations	2.94	3.00	3.00	0.91
Have sufficient information to decide to purchase a service without getting more information from elsewhere	2.93	3.00	3.00	0.93
Have details of competitors interest rates	2.85	3.00	3.00	1.08
Are available in branches via a special terminal	2.83	3.00	3.00	1.00
Have an online tutor to explain how to use the web site	2.48	3.00	3.00	0.96

In terms of the items at the bottom of the list, respondents generally perceived the following attributes to be less prevalent: links to other useful sites, the ability to make a decision based solely on the information provided by the web site, details of competitor rates, links to branches and an online tutor to help use the web site. These can be classed as features that are consumer-driven. Hence, there seemed to be the perception that bank web sites are generally less effective at providing consumers with broader information (outside that which is specific to the company and its products perhaps) that might enable consumers to make informed purchase decisions.

Gaps Between Web Site Visitor Perceptions and Expectations

The final stage of the analysis explored the gaps between expectations and perceptions. The intention was to identify the areas where expectations exceeded perceptions. The perception mean score was subtracted from the expectation mean score. Following this, a paired sample t-test was performed for each variable to determine the extent to which the scores were similar or correlated and the significance of the difference between the means at 95% confidence (Bryman and Cramer, 2001).

The results of this analysis are presented in Table 4. Variables are ranked in order of the extent that expectations exceed perceptions, this means that those items at the top of the list are potential sources of dissatisfaction according to the SERVQUAL model (Parasuraman *et al*, 1988).

Variables with a gap greater than 1 generally relate to usability, utility and sufficiency of the web site as an information source. Usability functions include

speed of download and ease of use. In a study amongst online banking customers, Jun and Cai (2001) note that speed and ease of navigation are critical to the success of online banks and, in a more general context, Hoffman and Novak (1996) show that there is a significant correlation between download speed and user satisfaction.

Table 4: Comparison of Mean Scores for Expectation and Perception Ranked by Mean Gap.

Expectations -perceptions	Paired Differences					
	Expectation Mean	Peception Mean	Gap	Std. Deviation	t	Sig. df (2-tailed)
Be quick to download	4.53	3.18	1.35	1.16	11.36	94 0.00
Have details of competitors interest rates	4.15	2.85	1.30	1.41	8.80	94 0.00
Have details of when bank charges apply	4.48	3.23	1.25	1.28	9.54	94 0.00
Have details of special packages available for students	4.57	3.33	1.24	1.22	9.74	94 0.00
Have details of bank charges	4.57	3.39	1.18	1.19	9.63	94 0.00
Have sufficient information to decide to purchase a service without getting more information from elsewhere	4.06	2.93	1.13	1.28	8.74	94 0.00
Be easy to use	4.77	3.67	1.10	1.09	9.92	94 0.00
Have details of how to transfer money between accounts	4.51	3.43	1.08	1.04	10.08	93 0.00
Have details of commission charged for foreign exchange	4.09	3.06	1.03	1.22	8.38	94 0.00
Have all banking needs included in menu options	4.27	3.27	1.00	1.12	8.88	94 0.00
Have daily updates	4.17	3.19	0.98	1.23	7.93	94 0.00
Have contact details for complaints	4.39	3.41	0.98	1.20	7.93	94 0.00
Have details of overdraft facilities	4.42	3.50	0.92	1.21	7.28	94 0.00
Have details of foreign exchange rates	4.07	3.22	0.85	1.24	6.95	92 0.00
Have the facility to send in questions by E-mail	4.48	3.60	0.88	1.20	7.03	93 0.00
Have an online tutor to explain how to use the web site	3.35	2.48	0.87	1.10	7.52	93 0.00
Have the facility to order brochures and more detailed information online	4.12	3.31	0.81	1.26	6.15	93 0.00
Have details of current interest rates being offered	4.53	3.73	0.80	1.11	6.93	94 0.00
Have details of branch locations	3.97	3.20	0.77	1.17	6.26	93 0.00
Have details of how to pay money in	4.32	3.58	0.74	1.17	6.24	94 0.00
Have a search engine	4.22	3.45	0.77	1.23	5.72	90 0.00
Have details of security arrangements for banking online	4.63	3.90	0.73	1.09	6.41	94 0.00
Be available in branches via a special terminal	3.52	2.83	0.69	1.27	5.28	93 0.00
Have a site map	4.20	3.59	0.61	0.95	6.29	93 0.00
Have links to other web sites such as Which? And other consumer organisations	3.38	2.94	0.44	1.17	3.45	92 0.00
Have a frequently asked questions page	3.76	3.41	0.35	1.43	2.23	94 0.03
Have details of how many bank branches there are	3.25	3.21	0.04	1.27	0.00	93 1.00
Have flashy graphics	3.03	3.12	-0.09	1.26	-0.66	93 0.51
Have pop-up windows	2.99	3.29	-0.30	1.33	-2.31	94 0.02
Have a requirement to register before supplying information	3.15	3.67	-0.52	1.46	-3.78	92 0.00

However, Jun and Cai (2001) argue there is an important distinction to be made between online systems quality and online service quality. Speed is not only dependent on the nature of the site content being downloaded but also on the computing hardware and method of connection being used to download information (Jayawardhena and Foley, 2000). Therefore, although these are areas where there are critical gaps between expectation and perception of provision it is unclear to what extent responsibility for improvement rests with the financial institution or with the internet user.

Utility functions include details of interest rates, bank charges, student packages, transfer facilities and foreign exchange. This is information that consumers might use as both evaluative criteria for bank selection and for ongoing evaluation and education about the services being consumed. Research by Raman and Leckenby (1998) found that perceived usefulness has a strong and positive relationship with the duration of web site visits and hence satisfaction.

Sufficiency functions include having sufficient information to decide to purchase without going elsewhere and having all banking needs included in menu options. Pedersen and Nysveen (2001) note that it is a common belief that the internet gives consumers access to more information and this is reflected in the metaphor of the internet as an "Information superhighway", coined by Koelsch (1995). However, contrary to this popular conception it would appear that consumers perceive the information provided on bank web sites to be limited. Muyllé *et al* (1999) in a study of online search behaviour, note that a major weakness of commercial web sites is that they do not satisfy the search needs of the visiting user since the information

being sought is either not available, not satisfying or not able to be located by the user. These observations appear to be borne out by the findings of this study.

DISCUSSION AND IMPLICATIONS

This paper has focused on consumer expectations and perceptions of bank web sites as a source of information. At a time when many financial institutions are investing heavily in the internet as a channel of distribution and communication, the research findings raise some important questions about the role of the internet as an information source for financial services and a consumer decision-making aid. Black *et al* (2001) note that it is the perceived attributes of an innovation that affect the rate at which it is adopted within a social system. However, despite the importance of consumer perception, Thornton and White (1999) argue that the introduction of new technologies is usually guided by management concerns for cost effectiveness and economies of scale while too often little is known about consumer concerns, motives and reactions.

This study has found that consumers of online financial information expect accessible and targeted information, which is easy to use and quick to download. In addition there appears to be an expectation that the online environment should seek to simplify financial decision making by facilitating the comparison of price information. Attributes that are not perceived as making a significant contribution towards excellence are the technical capabilities of the web site, namely pop-up windows and flashy graphics. Overall the perceptions of web site users are that the usability, utility and sufficiency of bank web sites at providing information generally do not match expectations.

Significant gaps between expectation and perception were identified in terms of consumer decision-making convenience and usability. These findings are consistent with content analysis undertaken by Jayawardhena and Foley (2000) which found that bank web sites are slow to download and that the quality of information provision is mixed. This study also found that perceptions matched or exceeded expectations for attributes that were not valued highly by respondents. It is suggested that these features are providing organisational benefits in the form of marketing information rather than adding value for the site visitor and the extensive utilisation of these interactive features appears to contribute to user dissatisfaction.

Based on these findings the following recommendations are made. In order to improve web site usability, banks may wish to examine the navigational functions and compatibility of web site software and hardware. Jun and Cai (2001) note that improvements in these areas will enable banks to increase the speed of online systems responses to customers input. However, measures to improve web site usability may have limited success since speed of download is also dependent on user software and method of connection. In order to manage expectations in these areas it may be necessary to inform users of the most desirable technical specifications. Alternatively, Sathye (1999) suggests that the problem could be handled by appropriate customer education. Understanding the impact of familiarity with the technology and user experience and competence would be of value in this context.

Utility and sufficiency functions could be improved by the inclusion of broader content that provides contextual information for consumers making decisions in an

easy to access format. For example, research indicates that decision making is enhanced when information on alternative product attributes is presented in a matrix format to enable ease of comparison (Bettman and Zins, 1979). The provision of decision-making environments that reduce temporal and cognitive search costs through facilitating easy comparison could be an opportunity for service differentiation.

To conclude, a focus group participant summarised his expectations about online information provision as follows:

“Most importantly bank web sites should be functional, simple and easy to use.”

SUGGESTIONS FOR FURTHER RESEARCH

The findings from both the qualitative and quantitative phases of this study have raised as many questions as they have provided answers. Thus, there are opportunities for further research in this area. Two interesting avenues for further study are segmentation and participant observation. The focus on a narrowly defined segment of the population did not permit a segmentation analysis to be performed. Further research, taking into account a wider demographic sample, might investigate differences in both expectations and perceptions among sub-groups.

Regarding the second issue, this study has relied predominantly on individuals' recall of their experiences of using bank web sites to access information and remote recounting of experiences (either via a focus group or self-completion questionnaire). It would be interesting and appropriate in this context to investigate the same issues using participant observation. Such a study would allow the behaviour of individuals

to be observed in the setting as well as allow their attitudes and perceptions to be recorded. Furthermore, it would provide an insight into the processual view, contrasting with the 'snap-shot' view provided by questionnaires.

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Task scenario effects on bank website expectations

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Abstract

Purpose: This research explores whether consumer expectations of website attributes differ according to information-seeking or transaction tasks. Information-seeking is a distinct online activity and is an important first-stage of the Internet adoption process, however there is little empirical research that compares online search and transaction behaviour.

Methodology: This pilot study focuses on retail bank websites in order to select a service familiar to consumers for which a website would serve as both an information source and a transaction channel. A self-administered questionnaire collected data from a convenience sample of 160 of UK adults in December 2005. The questionnaire measured normative and predictive expectations of systems and information quality.

Findings: Findings show differences between task contexts with regards to the requirement to supply personal details, the presence of a search engine and the inclusion of moving graphics. There are implications for studies informed by the SERVQUAL approach to measuring website quality.

Research Limitations: The acknowledged research limitations are the sampling method, sample size, sample composition and industry context which contribute to the low generalisability of results. However the findings indicate that there are differences in task scenario worthy of investigation in broader studies.

Value: Task scenario differences mean that data collection instruments should specify to respondents for which task a multi-functional website is being measured. This will be of value to practitioners and researchers who are studying website quality.

Research Paper Keywords: Information Search, Website Quality, Financial Services

1. Introduction

The purpose of this research is to explore any differences between consumer expectations of bank websites for information-seeking and transacting tasks. Research into information-seeking as a distinct activity is important since several studies have confirmed it as a predictor of Internet purchasing intention and as an important first-stage of the full-service adoption process (Ramaswami et al, 2000; Shim et al, 2001). Since the Internet operates both as a distribution channel and as an information source, consumers may choose to search for information and purchase wholly online, search for information offline and purchase online or search for information online and purchase offline. For example, in the UK 79% of adult Internet personal users reported that they had used it for “finding information about goods or services”, whereas only 48% had ordered tickets, goods or services (National Statistics, 2003a). Therefore, “a vast amount of window shopping is taking place online” (Kimiloglu, 2004, p 14).

In order to encourage adoption and continued use, growing numbers of website quality studies seek to identify the attributes of successful websites, however, the resultant scales exhibit limited commonality. For example, Finn and Kayande (2003) in an analysis of 27 website evaluation studies found 15 different dimensions and 40 different items. Several Internet researchers have been informed by the SERVQUAL research design (Parasuraman et al, 1988) and have either:

- revised the original scale items for the online context (for example, Kuo, 2003; Webb and Webb, 2004);

- used an E-S-QUAL instrument developed by Zeithaml et al (2000) (for example, Siu and Mou, 2002);
- or have followed Churchill's methodology (1979) to generate a new website quality scale (for example, Barnes and Vidgen, 2000; Loiacono, 2002; Wolfinbarger and Gilly, 2003).

Unfortunately, these studies rarely distinguish between attributes that are specific to either transaction or information-search activity.

In order to understand how task scenario might impact on SERVQUAL-based studies it is necessary to consider the underlying theoretical approach. Website quality is based upon service quality, which in turn is founded upon the expectation-disconfirmation paradigm developed by Oliver (1977, 1980). This paradigm states that customers form service expectations based on prior experience with the service and/or communications about the service (Van Raaij, 1991). Customers then compare these expectations with their perceptions of actual performance during and after the service encounter resulting in an overall judgment of service quality (Parasuraman *et al*, 1985). If expectations are met or exceeded then a positive judgment of service quality is formed, if expectations are disappointed then a negative judgment of service quality results. Accordingly, prior to visiting a website, individuals mentally consider what they expect and if the reality of using the website does not match their expectations then the consumer will decide that the web site does not contain features of value and will not continue to use it (Walker and Walker 1996; Breitenbach & Van Doren, 1998). The SERVQUAL approach sums the

difference between two 22-item question batteries to operationalise the expectation-disconfirmation paradigm and thus measure service quality.

The use of SERVQUAL per se might explain the differences in website quality findings since the SERVQUAL instrument has been criticized for its validity, reliability and lack of generalisability across industry contexts (see Buttle, 1996). This paper proposes that in addition to these criticisms the dual functionality of websites might result in expectation and perceptions varying according to whether consumers are considering information-seeking or transaction activity during SERVQUAL data collection.

This stance is supported by early research indicating that a task effect is present (Gefen and Straub, 2000; Zhang, 2000; Waite and Harrison, 2002; Lassar and Dandapani, 2003). However there are several acknowledged limitations of this research including its experimental design and use of student subjects. Therefore further studies are needed that investigate the effect of task scenario on consumer website expectations. This paper reports on a pilot study, conducted in 2005, amongst a small-scale convenience sample of UK adults that examines whether consumer expectations of their own bank's website differ according to their intention to use it for information search or transacting.

2. Research Context and Study Measures

2.1 Choice of Research Context

This research examines the expectations that consumers have of banking websites as a source of product information and as a transaction tool. It defines information-

seeking as seeking information on the financial products offered by a bank and not viewing personal information such as account balances.

The research context was chosen for two reasons. First, in order to select a service familiar to consumers. Penetration of banking services is high with 88% of households having at least one member with a current account (National Statistics, 2004b). Second, in order to test for both information-seeking and transaction task scenarios it was necessary to select websites that were generally multifunctional. Banking websites satisfy this condition. For example, Jayawardhena and Foley (2000) list a variety of distinct information-seeking and transacting tasks such as viewing account details, modifying account details, transferring funds between accounts, authorising money to leave the account, purchasing additional products and even downloading financial data for use in financial planning software. Finally a review of extant literature determined that research into how task context affects consumer attitude towards a banking website is sparse with only one experiment-based research study amongst university students being identified by the author (Lassar and Dandapani, 2003).

2.2 Use of Expectations

This study focuses on customer normative expectations of website attributes for several reasons. First it is difficult to apply established service quality models based on disconfirmation to Internet research where consumers have high levels of service unfamiliarity. One research problem is ensuring that non-users and light-users can comprehend the innovation-specific terminology used in item wording. For example a previous online banking study worded an item as “The bank’s site does not use

banner ads with cookies to collect” (Siu and Mou, 2002). It is contended that light and non-users of a website might not readily understand an item worded in this way. Dabholkar (1996) notes that the only type of evaluation that a consumer may hold about service delivery that they have not yet tried is expectation and thus this argument supports a research approach that focuses exclusively on expectations.

A second problem is that although Internet usage is growing, only 61% of UK adults have used the Internet (National Statistics, 2004a), hence participants in website quality studies may not have experienced the Internet and are not able to indicate their perceptions of the various quality dimensions. One solution would be to select a sample of website users but if one role of website quality is to convert non-users to users then it is important to capture non-user expectations. Some strategies employed by researchers to meet these challenges have been to use student samples or a laboratory setting however these approaches lead to a lack of generalisability to the wider population and findings that may differ from those gained in a naturalistic setting.

In addition to solving practical issues this focus on expectations is consistent with other methodologies. A growing number of empirical studies in the field of e-commerce examine consumer expectations and requirements (Romano, 2001). Expectations have been theorized to have a role in adoption of innovation by Rogers (1995) especially in the expectations of relative advantage. Boulding et al (1993) suggest that service quality perceptions are “a blend of ...prior expectations of what *will* and what *should* transpire during contact and ... the actual delivered service during the service encounter”(p 7). Van Dyke et al (1997) argue that instead of using

the SERVQUAL instrument “A better approach to understanding the impact of expectations on perceived service quality may be to measure “will” and “should” expectations separately and then compare them to a service quality measure” (p 205).

Therefore, research into the expectations that consumers have of the Internet allows for a comparison to be made between the expectations of non-users and users and understanding of the factors influencing expectations. In addition, an analysis of the groupings of consumers by expectation levels may reveal segmentation and marketing opportunities. Given that the Internet is a relatively new service technology, this knowledge will assist service firms decide strategic direction over which web site features to offer to meet the needs of target consumer groups and how to design and promote web sites to increase usage.

2.3 Focus on System Quality

This study examines systems quality rather than information content or transacting quality. In order to meaningfully measure whether expectations of website features differ across task scenarios it is necessary to generate a list of attributes that are task neutral. For example, the attribute “Easy payment mechanism” would be spurious in an information-seeking only context. Therefore it was decided to isolate measures of systems quality. Systems quality is considered an important component of website quality. McKinney et al (2002) note that the lack of physical contact inherent in the online shopping experience causes customers to “rely heavily on technology and system quality” (pg 297). Separate measures of Web site information quality and Web site system quality are consistent with information systems quality models by DeLone and McLean (1992) and Spreng *et al* (1996). In addition, the approach of

separating what is delivered or technical quality (information content) with how it is delivered or functional quality (the web site system) is also consistent with Gronroos's (1984) model of service quality. Lassar et al (2000) found that technical/functional quality outperformed the SERVQUAL dimensions in predicting customer satisfaction with retail-banking, they reasoned that this approach is more suitable where customers are actively involved or highly interested in service delivery and such would be the case in online banking. Therefore it is felt that a research approach that focuses on system quality is appropriate to apply in this study.

3. Data Collection

3.1 Design of Survey Instrument

An examination of empirical research that identified dimensions of systems quality in a consumer and retail-banking setting was the first stage of survey design. McKinney *et al* (2002) found three dimensions of systems quality: access, usability and navigation. However, this research was conducted amongst students in a laboratory setting and has not been tested comprehensively in a specific setting. Jun and Cai (2001) in a critical incident analysis of retailing banking bulletin board postings by Internet bank customers identified six dimensions of system quality: accuracy, ease of use, timelines, aesthetics, security and contents. However, there are three dimensions that are not task neutral, accuracy of transactions, timeliness of information and information contents leaving ease of use, aesthetics and security as systems quality dimensions usable in this study. Therefore this study measures the following five dimensions of Internet banking systems quality: access, usability, navigation, aesthetics and security.

The second stage was to operationalise these constructs by generating a list of item statements relating to website system attributes. A literature review of existing studies into banking website quality was undertaken and five empirical studies were identified (Joseph, 1999; Jun and Cai, 2001; Siu and Mou, 2002; Waite and Harrison, 2002; Jayawardhena, 2004). Table I presents an overview of the items statement used in each study that correspond to the system quality dimensions selected for this research.

Table I An Overview of Online Banking System Quality Item Statements

Dimension	McKinney et al (2002)	Jun and Cai (2001)	Jayawardhena (2004)	Siu and Mou (2002)	Joseph et al (1999)	Waite and Harrison (2002)
Access	Is responsive to your request Quickly loads all the text and graphics	<i>Speed of Responses*</i> <i>Accessibility of the Website*</i>	I can log into my account at Bank X every time and Web pages are downloaded quickly I can log into my account at Bank X's from anywhere in the world using any computer, there is no need to install additional plug-ins Bank X's website is truly 24 x 7, there are no occasions when the website is inaccessible	The speed of the logout of your account is fast The speed of the login of your account is fast	Transaction is efficient/no wait time Electronic bank with convenient hours of operation (7 days, 24 hours)	
Usability	Has a simple layout for its contents Is easy to use Is well-organised Has a clear design	Compatibility User Friendly Functions that customers need	Navigating within Bank X's interface is very easy, hyperlinks and pages are logically laid out	The bank's site is up and running for business The bank's site pages don't freeze after you have put in all your information	Electronic banking that is easy to use	Be easy to use
Navigation	Is easy to go back and forth between pages Provides a few clicks to locate information	<i>Easy Navigation*</i>	Bank X's website includes interactive features (including a demo) which are very useful	The site does not confuse you in what you want to do with the pages The bank's site does not get you lost The bank's site contains just the basics and is simple to use		Has a search engine Has a site map
Aesthetics	Not included	Attractiveness of the Website	Bank X's website incorporates a good colour scheme, easy on the eye, visually attractive and incorporates an effective layout	The bank's site does not have fine print that is difficult to read and hard to find	Electronic bank will have a professional appearance	
Security	Not included	Privacy Information transaction safety	When I access my account I feel secure, Bank X's website instill confidence	The bank's site is secure The bank shows care in how it collects your personal information The bank's site does not use banner ads with cookies to collect		Have a requirement to register before supplying information Have details of security arrangements for banking online

It should be noted that one study (Jayawardhena, 2004) had a factor label "Access" but that this had a wider definition relating to banking service access through "a number of points of entry" (pg 201). In addition there were two statements that applied to both Usability and Navigation dimensions and are presented as such. Jun

and Cai (2001) defined three statements as applying to “Usability” however these appeared to have closer correspondence to Access and Navigation dimensions and have been listed under that dimension, these statements are marked with italics and an asterisk.

This analysis resulted in the formulation of six item statements as follows:

DIMENSION	ITEM STATEMENT
Access	Should be quick to download
Usability	Should be easy to use
Navigation	Should have a search engine
Aesthetics	Should have moving graphics
Security	Should have security protection; Should have a requirement to supply
	personal details.

3.2 Data Collection

A self-administered questionnaire was used to collect data from a small convenience sample of 160 UK adults in December 2005. The aim of the pilot study was to capture a broad and sufficient number of respondents for some analysis to be carried out to test the questionnaire instrument and to identify whether a larger study into this area was justified (Brace, 2004). The sample frame was developed by the author using personal contacts based throughout the UK. 56 usable questionnaires were returned giving a response rate of 35%. In addition to questions to capture demographic and website use details, the survey instrument listed six website statements developed from the literature in two separate questionnaire sections. In each section respondents were asked their level of agreement on a 5-point Likert

scale where 5=Strongly Agree, 4=Agree, 3=Neutral, 2=Disagree and 1=Strongly Disagree. The first section asked respondents to indicate their agreement that if they were to use their bank's website to search only for product information that the following system quality attributes should be present in order to give excellent service. The second section asked whether these features should be present on their bank's website to give excellent service for making a banking transaction. Cases were selected list-wise on the basis both sections being completed giving a final sample of 44 respondents and an adjusted response rate of 28%.

3.3 Sample Characteristics

The demographic characteristics of the final sample are: 48% male, 52% female, 9% aged 16-34 years old, 61% aged 35-54 years old, 9% aged 55-64 years old and 21% aged 65+. 100% of the sample owned a current account, 86% had used the Internet at some point, 55% had visited their own banks website and 49% were online bankers. These proportions are compared to national statistics in Table II and show that this sample is similar to the national population in terms of gender composition but differs in other characteristics with participants in this study being older, having higher current account ownership and greater use of the Internet and online banking.

Table II. Comparison of Sample Characteristics with National Statistics.

Characteristic	Sample	UK
Gender	48% male, 52% Female	49% male, 51% female
Age	16-64 = 79%, 65+ =21%	0-15 = 19.7%, 16-64 = 64.4%, 65+ = 16%
Current Account Ownership	100%	88%
Have accessed the Internet	86%	61%
Accessed Current Account Online	49%	12%
Bank website visitor	55%	No figures available

Source: National Statistics (2003a, 2003b, 2004a, 2004b, 2004c)

4. Findings and Discussion

The data were examined in terms of mean, standard deviation, mode, and median score for each item. The findings are presented in two section, one which comments on results which were showed that similar expectations existed between the two task scenarios and one which comments on the results which differed across the two task scenarios.

Expectation Similarities.

Tables III and IV show the ranked mean scores for normative expectations of system quality attributes for information-seeking and for transacting. In both task scenarios it can be seen that the ranking is the same for “security protection”, “ease of use” and “a quick download”.

Table III Normative Expectations for Information Seeking

My bank's website should:	Mean	Median	Mode	Std Deviation
have security protection	4.75	5.0	5	0.534
be easy to use	4.55	5.0	5	0.589
be quick to download	4.36	4.0	4	0.613
have a search engine	4.14	4.0	bi-modal 4 & 5	0.824
require me to supply personal details	3.30	4.0	4	1.340
have moving gaphics	2.68	3.0	3	0.909

Table IV Normative Expectations for Transacting

My bank's website should:	Mean	Median	Mode	Std Deviation
have security protection	4.77	5.0	5	0.476
be easy to use	4.64	5.0	5	0.532
be quick to download	4.34	4.0	4	0.608
require me to supply personal details	4.02	4.0	4	1.045
have a search engine	3.77	4.0	4	0.831
have moving gaphics	2.45	3.0	3	1.109

It is interesting to note that security protection has such a high priority for both task scenarios since information-seeking has been viewed as being a lower-risk activity

than online transacting. For example, research shows that online purchasers are risk-seeking whereas consumers with lower purchasing rates are risk-averse with particular security and privacy concerns about the channel; however risk-averse consumers do use the Internet fully as an information source (Kwak et al, 2002, Miyazaki and Fernandez, 2001). Therefore it might be presumed that the requirement to have security protection might differ between task scenarios but these results indicate that this is not the case.

Equally although ease of use is recognised as being of prime importance in IT adoption (Davis, 1989) previous research has shown that perceived ease of use varies between the types of task being undertaken and becomes more significant when consumers are using a website to search for information rather than to purchase (Gefen and Straub,2000). However this study shows that in the context of Internet Banking it is given equal prominence by consumers. Finally quick download is similarly ranked across tasks. Several studies have found that download speed correlates significantly with Webs use satisfaction (Jayawardhena and Foley, 2000) and Cox and Dale (2001) suggest that “if a website too slow to download ...then customers will probably not attempt to use that site again but click to competitor” (p 129). Therefore across both tasks download speed can be viewed equally as an important component of satisfaction which would lead to continuing use.

Taken overall, these results are consistent with a previous study into retail banking expectations by Waite and Harrison (2002) who found that easy of use, quick to download and details of security arrangements were ranked as most important expected website attributes.

It is also interesting to examine the lower-ranked items for similarity. In this instance respondents tend to disagree that moving graphics should be present for both task scenarios. Studies across industry sectors suggest that the use of graphics enhances the online experience for consumers. In a survey amongst webmasters from 122 Fortune 1000 companies, Liu and Arnett (2000) found that playfulness was considered a critical website quality dimension. They note that “there is a need for Web designers to cultivate hedonic pleasure in site design by motivating customers to participate, promoting customer excitement and concentration and including charming features to attract customers and to help them enjoy the visit” (p 24). Hedonic features are defined as those that deliver entertainment value (Raman and Leckenby, 1998). Rice (1997) suggests that customers will return to site that they find enjoyable. The link between website enjoyment and continued use has been explored by Hoffman and Novak (1996) who conceptualise a website visit that is both enjoyable and seamless as delivering “flow”.

However these results indicate that within the context of retail banking websites such features are not highly valued by customers. This is consistent with Raman and Leckenby (1998) who found during an experimental study amongst undergraduates, using a test website for orange juice, that utilitarian aspects of website design were more highly valued than hedonic features. Furthermore, these results support the findings of another experiment-based study that indicates that animation decreases information-seeking performance (Zhang, 2000). This study shows that consumers disagree that “entertaining” website features should be present on banking websites for both information-seeking and transacting which suggests that such features are not task specific but rather product or service specific.

Expectation Differences

Differences exist between the rankings in terms of search engine presence and the requirement to supply personal details. In order to test to see if these differences in mean score were significant, a t-test for two related means was conducted. It is acknowledged that this test is commonly applied to interval data and that Likert scales are considered as capturing ordinal data. However Bryman and Cramer (2001) argue that “parametric tests can also be used with ordinal variables since tests apply to numbers and not what those numbers signify [and that]... parametric tests are routinely applied to such variables” (pg 15).

Table (V) shows the items listed in order of mean difference and those items with no significant difference are listed in the shaded section. Significant differences between the two means were found for the items “supply of personal details”, “presence of search engine” and “presence of moving graphics”. No significant difference was found between items “ease of use”, “quick to download” and “security protection”. The greatest mean difference exists between supply of personal details, with the transaction task scenario having a higher mean score. In the context of online banking security worries are linked to unauthorised account access (Black et al, 2001), whereas privacy worries relate to inappropriate gathering and use of personal details (Cockrill, 2004). These findings indicate that respondents feel that the requirement to supply personal details is more appropriate when transacting rather than gathering information.

Search engine and moving graphics presence both have a significant higher mean score in the information task scenario. A search engine helps locate a topic within a

website, it can be assumed that this function might be considered of greater use for information-seeking than transacting. For example, whilst transacting may be a regular and repetitive activity (i.e. viewing account balances each month), each information search may be unique in itself and once the information need is met the same enquiry will not be repeated soon. Therefore, a search engine will repeatedly assist information-seekers address their individual data queries whilst those transacting will not require continuous redirection to a transaction page after its initial identification. In both instances respondents disagree with the inclusion of moving graphics on websites but there is small difference, which indicates that lower levels of disagreement exist within the information-seeking task scenario. Whereas both transacting and information search can be considered goal-directed behaviour it might be for transacting the need to complete “quickly and without distraction” is stronger (Sweeney and Lapp, 2004, pg 284).

Table V Differences between Information Seeking and Transacting

	Information Seeking Mean	Transacting Mean	Mean Difference	Std Deviation	t	df	Sig (2-tailed)
Supply of Personal Details	3.30	4.02	-0.72	1.37	-3.52	43	0.00
Presence of Search Engine	4.14	3.77	0.37	0.78	3.09	43	0.00
Presence of Moving Graphics	2.68	2.45	0.23	0.64	2.35	43	0.02
Ease of Use	4.55	4.64	-0.09	0.47	-1.27	43	0.21
Quick to Download	4.36	4.34	0.02	0.55	0.27	43	0.79
Security Protection	4.75	4.77	-0.02	0.51	-0.30	43	0.77

5. Conclusion and Implications

The acknowledged limitations of this research are the sampling method, sample size, sample composition and industry context which contribute to the low generalisability of results. However, this pilot study indicates that there are differences in normative expectations of website system quality according to task scenario leading to

conceptual and methodological implications that justify the undertaking of a larger broader study.

Conceptual implications

Since expectations of systems quality vary across task scenario it would be of interest to learn how this variation influences intended and actual adoption behaviour. Previous studies into website design quality have considered it a key determinant of online success and a strategic response to competitive pressure (O'Neill et al 2003). High website quality has been linked to positive consumer outcomes including: website adoption and usage (Rowley 2001), high hit rates, customer retention, increased time spent on site and positive word of mouth (Santos 2003). However, recent empirical research has failed to find any increase in usage between website quality and time spent online (Reynolds et al 2004) and therefore the link between website quality and consumer website adoption needs to be explored further.

A continuation of the current approach that isolates online information-seeking from online transacting might prove fruitful. This method of enquiry would be consistent with the Rogers (1995) model of innovation adoption where low-risk activities, which allow a potential adopter to trial an innovation, are undertaken before the final adoption decision is made. Within this context it is possible to frame a number of research questions. For example, if information-seeking is an important first step to transacting, do high expectations of information search attributes taken with high perceptions of website presence lead to intention to adopt for transacting and, in turn, actual adoption? A broader study with a larger and more representative sample, would be able to explore the impact of various demographic and socio-economic

variables upon expectations across task contexts. For example, do expectations vary according to prior experience with the internet and with the product? Or within gender, age and income groupings?

The role of customer expectations in evaluating service offerings means that it is important for practitioners to accurately pinpoint what is contributing towards a certain level of consumer expectation. In addition, information on adoption behaviours and an understanding of how expectations vary across task may enable marketing practitioners to appropriately “manage” expectations in order to facilitate high levels of customer satisfaction (Peters 1988). Kimiloglu (2004, p 14) contends that “building on the information advantage can be expected to pay off in future”, since information search has been identified as preceding online transacting. Finally, there may be opportunities to segment consumers according to task expectation or other variables and thereby target relevant quality levels to customers holding homogenous expectation levels (Pitt and Jeantrout 1994).

Methodological implications

This paper extends current criticism of the use of expectations within SERVQUAL. Teas (1993) argues that the imprecise use of expectations within SERVQUAL has led to measurement error. Van Dyke et al (1997) writing about the application of SERVQUAL to information systems (IS) criticise the failure of the original instrument to distinguish between predictive (will) and normative (should) expectations concluding that “those choosing to use any version of the IS–SERVQUAL instrument are cautioned” (pg 205).

These findings indicate that there are implications for study design when applying SERVQUAL in an online context. Researchers using this approach should be aware that failure to account for sample composition might undermine their results. It is important to remember that SERVQUAL delivers a service quality measure through subtracting consumer expectations from perceptions of a service.

To illustrate the implications let us consider the administration of a generalised study of website quality. If the majority of study participants had only used a website for information-seeking, based on the current findings, they would be likely to give an expectation mean score of 4 for the presence of search engine contributing to excellent service quality. If we assume a perception mean score of 3 then the final quality score of -1 would lead to the website under examination not being perceived as delivering excellent service quality with regards to this attribute. However, if the majority of a sample had only used a website for transacting and not for information-seeking then the expectation mean score might be 3. If the perception mean score remains unchanged then the final quality score would be 0, thus this feature would meet the criteria for delivering excellent website quality. Thus it is important to ascertain participant experience and use of a website for each task scenario when interpreting results.

Finally, these empirical results demonstrate that in order to improve result validity researchers should consider specifying a specific website task when writing a question, particularly when measuring those attributes relating to system quality or functional service quality. This approach would be consistent with conceptualisations

of quality within the fields of services marketing (Gronroos, 1984) and information systems management (DeLone and McLean, 1992).

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