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Loyalty of online faculty: A work design perspective of the impact of a telecommuting work environment on employee loyalty

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Loyalty of Online Faculty: A Work Design Perspective of the Impact of a Telecommuting Work Environment on Employee Loyalty

by

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ABSTRACT

This study empirically evaluates the theoretical impact of a telecommuting or online work environment on employee loyalty. While the concept of employee loyalty has been extensively researched, the concept of the impact of the work environment on employee loyalty is fairly new. Specifically, this study operationally defines the work environment characteristics that contribute to employee loyalty and examines the impact of the online or telecommuting work environment on employee loyalty.

A survey instrument is utilized to collect perceptual data about the psychological components of the work environment and their impact on employee loyalty from the employee's perspective. Multiple linear regression analysis is used to analyze the data from one hundred and three respondents to determine correlation between the work environment characteristics and employee loyalty. Additional statistics utilized in the analysis of the data include: factor analysis, t-test, K-S test, and Cronbach's Alpha.

While the study's findings confirm that the three work environment factors (job satisfaction, social interaction, and trust) contribute to employee loyalty as represented by the surrogate, intent to turnover, the dynamics underlying the perceptions of telecommuting and traditional collocated employees is complex. Telecommuting employees, as hypothesized, demonstrate higher levels of intention to turnover, the key construct in the study, than do traditional onsite employees. Similarly, job satisfaction is

much lower for telecommuters. No statistically significant differences were found in trust or social interaction. When exploring casual impacts of satisfaction, social interaction and trust on intention to turnover, very different dynamics emerged between the telecommuting and traditional. In particular, job satisfaction, while very important to the traditional workers, was insignificant to intention to turnover to telecommuter employees. In addition, telecommuters apparently had derived alternative mechanisms to allow for social interactions, other than face-to-face ones. Trust, in both groups, is an overriding factor in ameliorating intention to turnover.

This research adds to current perspectives on the effects of the work environment on employee loyalty. This research will enhance insights into this increasingly prevalent work environment, and organization researchers and managers will be able to use these results to enhance understanding of the impact on work environment. These contributions may help to decrease turnover and enhance the satisfaction derived in telecommuting work environments.

The study ends with a discussion of limitations and suggestions for future research.

CHAPTER ONE

INTRODUCTION

> "All of these electronic innovations—email, shared screens, video conferencing, and video phone calls—are ways of overcoming physical separation. By the time they become commonplace, they will have changed not just the way we work together but also distinctions now made between the workplace and everywhere else." (Gates, Myhrvold, and Rinearson, 1995, p. 151-152)

Background

Since the industrial revolution, most employees have worked together in the same work environment. This physical proximity of employees to each other is also known as being collocated (Ensign, 1998). Technological advances have created the opportunity to expand our ability to work together without being bound by office walls. The advances of technology have formed the infrastructure that makes it possible to function in a work environment that transcends distance, time zones, and traditional conceptual work environment boundaries (Bailyn, 1988; Harrington and Ruppel, 1999). This new work environment was first identified as teleworking or telecommuting by Niles in the 1970's. Niles (1994) went on to describe telecommuting as the ability to complete work without traveling to a traditional work environment or the completion of work in a working environment that exists outside and away from a traditional work environment. This different approach to work environments brought with it changes in the way employees interact within the work setting.

Significant research has been completed in the areas of employee's perceptions of the work environment. The research efforts have been focused on traditional work environment paradigms. A thorough review of the literature indicates that the relationship between employee perceptions regarding the telecommuting work environment and employee loyalty has not yet been empirically examined. This lack of research into the influence of the work environment on employee loyalty is the area that the focus of this study addressed.

Relevance of the Topic to Practitioners

The introduction of technologies such as personal computers, desktop software business applications, and the advances in networking technologies that enabled communication between computers made the move to a telecommuting work environment a practical reality (U.S. Department of Transportation, 1993). As technological advances have facilitated the move to telecommuting, other factors have driven the adoption of the new work environment and propelled organizations and their employees to experiment with telecommuting (Daniels, Lamond, and Standen, 2000). This concept of a non-collocated work environment was initially considered by some organizations as a solution to the OPEC driven fuel shortages of the 1970's (Tolbert & Simons, 1994). The possibility of addressing the anticipated costs associated with the fuel shortage and rising fuel prices sparked serious consideration of telecommuting work environments. Recent increases in fuel costs are again focusing interest on telecommuting.

In addition to being a solution to rising fuel cost, telecommuting also provides employers the opportunity to recruit and retain employees. This work environment uniquely provides the opportunity to include previously geographically non-collocated employees in organizational efforts (Huws, Korte, and Robinson, 1990). This is particularly important when dealing with employees who possess specialized skills, are in high demand, or for personal reasons may not wish to relocate. Organizations that are able to offer telecommuting as a benefit are often perceived as highly desirable by employees. In addition, telecommuting also appears to contribute to reduced levels of perceived intention to turnover in employees (Huws, Korte, and Robinson, 1990).

The retention of employees is important to organizations due to the associated cost of recruiting and training and the need to retain employee expertise. This is a vital goal of any organization.

To achieve this goal, organizations need to be able to manage employee expectations and needs with regard to the work environment. Effective management of employee expectations and needs requires a fuller understanding of employee attitudes associated with the work setting.

Relevance of the Topic to Researchers

Scholars have studied employees' perceptions regarding traditional work environments. Changes in the nature and constructs of work environments necessitate a fresh look at how employees' attitudes and perceptions can be impacted by these new and innovative non-traditional work environments that are not based on collocation of employees.

Notions of job satisfaction, social interaction, trust and intent to turnover must be reexamined in the light of new work environments. Thus, a gap has opened up in the literature that must be filled. This gap is partially described by Lipnack and Stamps (1997) as they described challenges that telecommuting teams encounter.

> "A major reason that many of today's teams are ineffective is that they overlook the implications of the obvious. People do not make accommodations for how different it really is when they and their colleagues no longer work face-to-face. Teams fail when they do not adjust to this new reality." (Lipnack and Stamps, 1997, p. 7)

This acknowledgement of the gap in the area of work design for teleworkers is echoed by Birchall and Lyons (1995).

> "…Organizations are using IT to support the move to the more mobile and flexible workforce. It is making possible the location-independent workforce, but we stress that without an effective strategic approach business is unlikely to achieve the possible benefits. The benefits will result from sound implementation and include a radical rethink of the role of the traditional office." (Birchall and Lyons, 1995, p. 5)

Purpose of this Study

The purpose of this study is to close the gap above in the literature and provide managerial insights that will allow for better performance, increased satisfaction, etc. in the workplace. In addition, this study will advance current understanding and explore aspects of the relationship between employees' perceived attitudes regarding their work environment and their loyalty levels. More specifically this study will explore this relationship with regard to a non-collocated or telecommuting work environment. This area of study has not been adequately addressed in the literature and subsequently this study addresses this gap in research. The researcher of this study compared and tested

specific linkages in the characteristics of the traditional collocated work environment and the non-traditional, non-collocated work environment.

The specific focus of this study is the correlation between perceived employee perceptions and attitudes regarding characteristics of work environments and employee loyalty. With this relationship in mind, the additional focus of this research is to determine if the relationships between employee perceptions of the work environment and employee loyalty are notably altered in a non-collocated work environment. To what degree does the teleworking environment contribute to a positive, negative, or mixed change in the psychological interaction and perceived loyalty of a teleworking employee for the organization? With the intent of making a contribution to a more complete and comprehensive understanding of the impact of the work environment on employee perceptions, the purpose of this study is to:

1. Examine the critical theoretical characteristics of work environments with regard to employee's perceived attitudes that have been studied in traditional environments and examine if the relationships found in management literature hold in non-collocated work environments. The identification and examination of the characteristics will be based on the existing literature. The characteristics will be considered in both a traditional collocated work environment and non-traditional, non-collocated work environment. What are the pertinent relationships between these characteristics that influence employee attitudes?
2. Empirically examine these relationships in a work environment that allows for comparisons and contrasts. A study will be executed for the purpose of

statistically analyzing these relationships, so that the theoretical linkages between constructs can be examined.

3. Create and modify an instrument for the measurement, testing, and estimation of the impact of the work environment on employee attitudes based on work done in previous research.

The remainder of this chapter consists of an overview of the research followed by an outline denoting the contents of each chapter in the study.

Organization of the Research

This dissertation consists of five distinct chapters. The following is a descriptive outline of each chapter's content.

Chapter One is an introduction describing the extent and intent of the research.

Chapter Two is a review of the relevant literature that is pertinent to the study of collocated work environments, including literature in the areas of management, sociology, psychology, and engineering management. Included in this review is an examination of the identified characteristics of traditional work environments that have been studied. The intent of the examination is to establish the current state of knowledge for understanding the impact of the work environment characteristics on employees' attitudes and then translate that understanding to show how collocated work environments might be impacted. This review will also evaluate interactions between the characteristics of work environments, especially in regard to how they might affect employees working in a non-collocated work environment. A set of hypotheses based on the extant literature are developed. These hypotheses will underpin the theoretical model

examined in this dissertation and demonstrate the contribution to knowledge of the overall work.

Chapter Three is an outline of the methodology used for this research including the development of the data collection instrument, the data sample, an explanation of the data collection methods and processes, and the design and foundation of the statistical experiment(s) and associated statistical analysis.

Chapter Four presents the results of the study and the statistical evaluation of these results. The theoretical implications of the study will be reviewed and evaluated in context of the results of the study.

Chapter Five includes a discussion of the results of this study, the conclusions drawn from the research, and the overall contributions of this study. Within this chapter there is an overview of the research, limitations of the study, implications for further research, and a brief review of what has been gained from this study.

CHAPTER TWO

LITERATURE REVIEW

> "Any group of people who need each other to take effective action for the company can do so immediately without regard for organization or location." Mark Armentrout, Manager of Information Technology Arco Exploration and Production (Fisher and Fisher, 2001, p. ix)

Chapter Overview

The contribution of this dissertation to the literature is the examination of the impact of non-collocated work environments on relationships that have been studied in traditional work environments, so as to ascertain the impact of collocating on dimensions of job outcomes and worker attitudes. This chapter will review the relevant literature that underpins the study and thereby establishes the foundations and contributions of this work. The selection of constructs studied in the research will be justified from the vast management literature. To make a contribution to that literature in regard to the impact of non-collocating work environments, a review is undertaken and relationships that have been established over the past fifty years or more of management research will be summarized. Rather than review the entire body of this vast literature, the study examines summary articles and conclusions that have been reached on each construct studied.

The study identifies important psychological constructs that make up employee attitudes regarding the work environment location that are related to perceived employee loyalty. The proposed constructs of the work environment are tested with data from a

work environment with collocated employees. Accordingly, the literature review examines an extensive array of pertinent publications on the subject of perceptions of the work environment location and the relationship of this factor to perceived employee loyalty.

Further analysis of the literature has revealed that researchers have neglected the issue of developing sound empirical theories that specifically examine the relationship between employee work environments and employee loyalty. In fact, there is little empirical and comprehensive evidence that explains the extent of the work environment's contribution to perceived employee loyalty. The studies that do exist provide limited explanations of the characteristics of the work environment and how they contribute and relate to employee perceptions regarding employee loyalty. This review has led to the identification of a gap in the existing literature regarding the impact of the work environments on perceptions and attitudes that relate to employee loyalty. This gap in the literature provides the purpose for this research study.

Introduction

Few scholars have written on the topic of the relationship between the work environment location and perceived employee loyalty. While several scholars have examined the topic of individual employee loyalty extensively, there has been little focus on the influence of the work location on perceived employee loyalty. The body of research that exists on employee loyalty, typically under the subject of turnover and intention to turnover, fills numerous volumes. While this research is instructive to the research underlying this dissertation, it does not speak authoritatively to collocation

impacts on loyalty issues to companies. The recent prevalence of collocating strategies being used in organizations makes the topic ripe for research, so that practitioners can make informed decisions about collocating and its impacts. Because of its relative newness, collocating research has not received the scientific scrutiny that work environment has received. This literature review is focused on the contributions made by leading academicians and practitioners on the subject of workplace environments and the impact of those environments on loyalty to the firm. The objective of the literature search is to form a basis for the research outlined within this document.

In an effort to gain an understanding of perceived employee loyalty as it relates to the work environment location this section's intent is a review of the pertinent available literature on the current state of knowledge of work environments and perceived employee loyalty. The research of this literature review falls into the following categories: rationalization for constructs included in this research, definitions of work environment locations, the relationship of intent to turnover to employee loyalty, the dimensions of employee loyalty, and the components of the work environment locations that contribute to perceived employee attitudes.

Rationalization for Constructs Included in the Research

Since the second decade of the 20th century, organizational theorists, researchers, and scientists have studied the impact of the work environment on employee performance; the goal being to understand how workers and the organizations interact. The ultimate goal, nevertheless, was to understand how organizations can perform better by using people effectively, while appreciating and recognizing the impacts of the

organization on employees. In essence, the literature suggests that the human impact on organizational performance is determined by the interaction between employees and the work environment. This perspective is supported by the work and findings of several experts in this field including those identified below.

Because of his seminal impact, almost every review of management theory begins with the work of Fredrick W. Taylor. Taylor (for summary see Taylor, 1967) theorized that by analyzing and studying the work process that the most efficient manner of accomplishing the task would be identified. Because the industrial management knowledge base of the time was insufficient and undeveloped, Taylor believed that an optimal management effort could be generated and that the best results would come from a joint effort between a trained and qualified management and a cooperative and innovative workforce. His most memorable contribution was to the field of time-motion studies. Taylor would analyze the work to be accomplished, break it into its collective component parts and then measure each based on time increments (Taylor, 1912). The application of Taylor's theory is often referred to as "Taylorism." His scientific management theory consisted of four general principles. The first was to replace rule-of-thumb work methods with techniques based on a scientific study of the tasks. The second was to scientifically select, train, and develop each employee instead of passively leaving them to train themselves. The third was to provide specific and detailed training, instructions, and management of each worker in the performance of that worker's task (Montgomery 1989). The fourth was to as much as possible equally divide the work between management and employees; the goal being to allow managers to apply the scientific management principles in the planning of the work and allow the employees to

perform the tasks. The work done by Taylor in time-motion studies opened the door for others.

A second major stream of work is credited to the Gilbreths (see 1973 for summary) for bringing together two streams of management thinking. They followed work in time and motion studies pioneered by Taylor and developed their own independent theory involving motion studies. They were strong proponents of the scientific method and proclaimed it to be the only management method consonant with the psychological health and development of employees. They are also credited with the development of the study of workplace psychology (Gilbreth, 1914). The Gilbreths have been credited with sparking a new and growing interest in the area of industrial psychology, particularly in the area of employees' perceptions and attitudes regarding the work environment.

A third stream of management thought can be traced to industrial psychology initiated by Frederick Herzberg (see 1982, 1987 for summary). His Motivation-Hygiene theory focused on the components of the interactions that the employee had with the organization on two distinct levels. The first level was the hygiene level or the components of the relationship that relate to the employee's adjustment to the environment for survival and comfort. These components of the relationship include: policy and administration, supervision, interpersonal relationships, working conditions, compensation, status, and security. Herzberg (1982, 1987) asserted that the lack of these components could lead to job dissatisfaction. However, he also believed that the amelioration of these factors did not lead to job satisfaction.

The second level of Herzberg's theory involved the on-the-job motivating factors that included the nature of the tasks the employee performs and his/her opportunities to be challenged by the arrangement and organization of these tasks (Herzberg, Mausner, and Snyderman, 1959; Herzberg, 1982, 1987; Robbins and Judge, 2007). These factors encompassed the employee's perceptions of achievement, sense of accomplishment, recognition for achievement, interesting and meaningful work, appropriate responsibility, opportunity for advancement, and personal growth. While there have been some criticisms of Herzberg's theory, it has brought to the forefront specific concepts regarding work environments. Recently Herzberg's theory has been reconsidered as emerging research from the field of positive psychology has been shown to be fairly consistent with the basic concepts of the motivation-hygiene theory (Sachau, 2007). Herzberg's theory laid the ground work for others that followed in the area of industrial psychology.

Similarly to Herzberg, Vroom developed a theory based on the employee's perception of the work environment and his/her interaction with it. Vroom's (1964) expectancy theory remains a widely accepted explanation of employee motivation. Vroom's expectancy theory is grounded in the assumption that an employee's behavior is the result of the employee making conscious choices with the intent of maximizing pleasure and minimizing pain.

Expectancy theory is based on the perspective that an employee's tendency to act or behave in a particular manner is dependent on the extent to which the employee's expectation is that the specific act will be followed by a given outcome and the desirability of the outcome to the employee (Robbins and Judge, 2007). The theory

predominantly focuses on three aspects of the relationship between the employee and the organization shown in Figure 1.

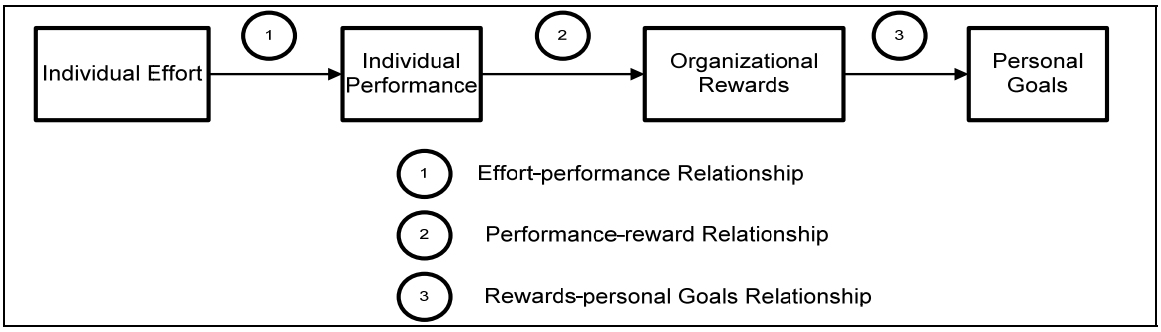

Figure 1. Expectancy Theory
(Robbins and Judge, 2007)

The first of these relationships is the effort to performance linkage. This relationship is based on the concept that there is a probability perceived by the employee that committing a certain amount of effort will lead to performance. The second is the performance to reward linkage. This relationship is a result of the employee's belief that performing at a certain level will result in a desired output. The third and final aspect of the relationship between the employee and the organization is the rewards-personal goals linkage. This is the level to which the employee perceives that the organizational rewards will satisfy his/her goals and the level to which the employee values the rewards (Robbins and Judge, 2007).

In a similar fashion McClelland's theory of needs focused on an employee's needs for achievement, power, and affiliation (McClelland, 1961, 1975; Atkinson and Raynor, 1974; Stahl, 1986; Robins and Judge, 2007). The needs were identified as follows. The need for achievement was defined as the compulsion to excel in comparison to a set baseline of expectations. The need for power was identified as a

desire to compel and/or influence others to behave in a manner that they would not have behaved in otherwise (Riggio, Murphy, and Pirozzolo, 2002). Finally the need for affiliation was described to be the intrinsic desire to participate in friendly and close interpersonal relationships. These needs are tied to the employee's ability to achieve them. An employee's ability to achieve is tied to and evident in the foundations of the individual characteristics of the employee.

These individual employee characteristics have been defined by Robbins and Judge (2007) as ability, biographical, and learning. Ability includes both intellectual and physical abilities. The primary focus with regard to ability is expressed by Robbins and Judge as ability-job fit. Ability-job fit is related to how well an employee is suited for a particular job. Most significantly they indicated that ability-job fit is related to an employee's job satisfaction level based on the employee's perception of how well his/her skills are matched to a particular job (Riggio, Murphy, and Pirozzolo, 2002; Lubinski and Benbow, 2004). The biographical component is related to factors that have an impact on an employee's production including turnover, social interaction or citizenship, and job satisfaction (Cotton and Tuttle, 1986). Finally the learning component is defined as any change in behavior that occurs as a result of experience within the work environment (Dunnette and Hough, 1990; Robbins and Judge, 2007). This facet has implications in that it suggests that employees may experience some event in their work environment that could initiate changes in their perceptions regarding their relationship with the organization and how they behave or interact within the organization.

This vastly extensive knowledge base can be summarized in the following model adapted from models proposed by Megginson, Mosley, and Pietri (1992) and Hellriegel,

Slocum, and Woodman (1986) shown in Figure 2. The model shows the work environment to be a system with environmental forces or factors constantly interacting with the environment. These factors related to and interacting with the work environment also interact with employees working in the environment and impact their perspectives regarding the work environment.

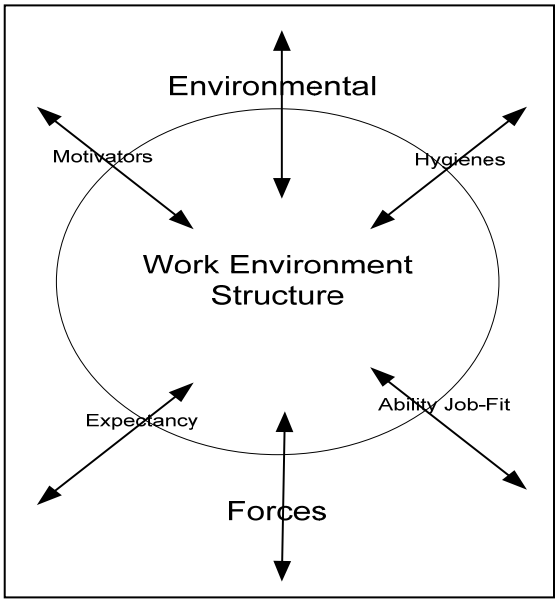

Figure 2. Open Organization System

As stated previously, the overriding purpose of the dissertation is to uncover the impact of non-collocated work environments on worker performance, as well as to study the associated impacts on worker attitudes. Drawing from the vast literature summarized ever so briefly above, the following model in Figure 3 was distilled. The model was developed as a culmination of the literature reviewed, personal professional experience from over a decade in this field and interaction with colleagues. This researcher believes

that this model is the one most worthy of exploration given the status of the literature on impact of collocated work environments on employees and more importantly the lack of information on the impact of non-collocation on employee attitudes and perceptions.

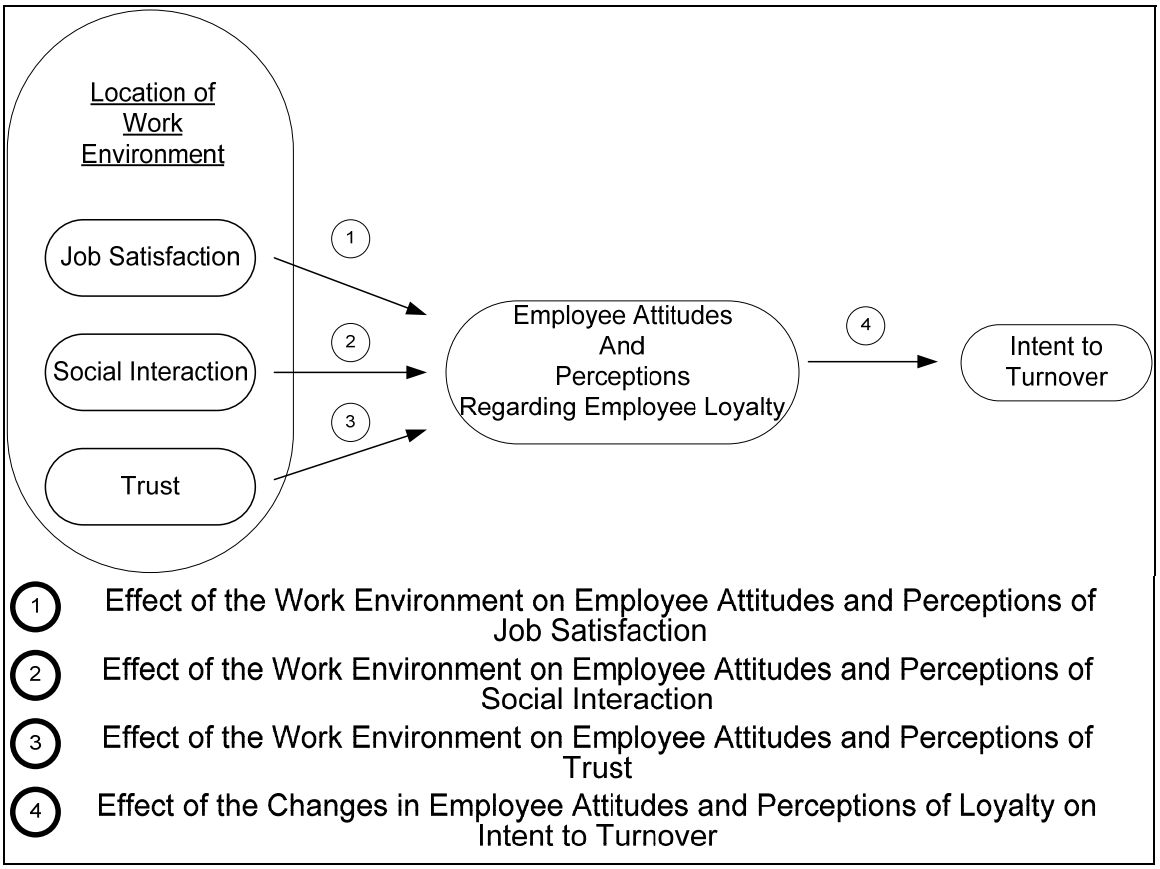

Figure 3. Aspects of the Work Environment Related to Employee Attitudes Regarding Loyalty

In the following sections, collocated and non-collocated work environments will be discussed and the linkages between each of the variables in the model will be explicated based on the extant literature which was created based on non-commuting environments, and hypotheses will be derived based on the impact of telecommuting on

that relationship. Because parsimony is a virtue in doing research, only the most relevant variables were chosen.

Multiple aspects of the work environment that are related to an employee's perception of his/her relationship to the organization are depicted in Figure 3. These aspects or characteristics of the work environment are interrelated in how they contribute to the formation and continuity of an employee's attitude regarding his/her loyalty to the organization. The perceived work environment factors of job satisfaction, social interaction, and trust are important aspects of the work environment that impact the employees' viewpoints and organizational loyalty.

The concept of work environment contributing to an employee's perceptions and attitudes regarding loyalty is fairly new, and it is important that there should be a comprehensive review of the literature. One of the requirements of this review is that it must describe what the academic community has put forth on the subject of each of the work environment characteristics that are perceived to contribute to employee loyalty and intent to turnover. In order to utilize the theorized relationship between employee loyalty and intent to turnover, the review must also include academic literature regarding the linkage between perceived employee loyalty and intent to turnover. Clearly, each of the work environment factors and dimensions act as a contributory aspect to the formation of employee attitudes.

The following section will consider the structure of traditional work environments followed by a section discussing the dimensions of non-traditional or telecommuting work environments. These dimensions of both work environments include physical

structure, location, components of social interaction, and a brief perspective of managerial challenges each work environment presents.

Defining Collocated Work Environments

A traditional work environment typically includes a fundamental framework regardless of the industry (Hill, Ferris, and Martinson, 2003). This framework includes a common work environment with immediate physical access to co-workers and management. Employees that work in a common work environment are referred to as being collocated. In other words, the traditional work environment is key to how a group of individuals are brought together to complete a predetermined function (Ensign, 1998).

Rapert and Wren (1998) describe the traditional work environment as inclusive of policies, a perceived hierarchy, work roles, and the underlying administrative support structure. They identified these characteristics of the traditional work environment to be crucial to the control, coordination and conduct of the work activities.

Collocation is the underlying foundation of the traditional work environment characteristics. Immediate physical access to co-workers, obvious physical oversight of management, corporate policies and processes, and other factors contribute to an employee's perspective regarding his/her relationship to the organization.

Similarly managers in a traditional environment are typically well skilled in managing collocated employees. "Traditional management skills are often based on the assumption that the employees are located just down the hall; that they are all there at the same time; and that they share a common culture" (Fisher and Fisher, 2001).

As can be seen from the descriptions of Fisher and Fisher (2001), Ensign (1998), and Rapert and Wren (1998), there are several characteristics of a traditional work environment. The most significant characteristic of a traditional work environment is that employees are collocated. This affects not only the employee's ability to interact but his/her sense of belonging and contribution to the organization (Ensign, 1998; Rapert and Wren, 1998; Fisher and Fisher, 2001).

As previously outlined, the following section will review the dimensions of non-traditional or telecommuting work environments. This will include a clear definition of a non-collocated work environment and the challenges this work environment presents to management and employees.

Defining Telecommuting Work Environments

A telecommuting work environment in a general sense is a non-collocated work environment that removes employees from the traditional office (Hill, Ferris, and Martinson, 2003). More precisely, telecommuting can be broadly defined as a working environment that exists independently from a traditional office structure. The most easily identifiable and distinct difference from a traditional work environment is that a telecommuting work environment typically lacks normal opportunities for physical collaboration and interaction (Gates, Myhrvold, and Rinearson, 1995). In other words, the telecommuting work environment exists without the structure provided by collocation. This lack of collocation presents a unique set of challenges with regard to managing employees (Daniels, Lamond, and Standen, 2000). In fact, the telecommuting work environment requires a unique managerial effort by the organization due to the

absence of collocation that is inherent to the traditional work environment. This unique effort must include a relationship with the employee that compensates for both the lack of the structure and constraints of a collocated work environment and the need to nurture the psychological well-being or perceived attitudes of the teleworking employee (Daniels, Lamond and Standen, 2000).

There are a variety of telecommuting work environments available to organizations and employees. The most commonly thought of telecommuting work environment is the employee's home. In fact, many telecommuters simply create office space in their homes equipped with technologies specifically selected to augment their work effort. Telecommuting can also include the use of remote offices. Many telecommuters take advantage of wide area network (WAN) technologies and utilize locations that are implementing technologies that allow for Internet connectivity such as coffee shops, libraries and other locations (Hill, Ferris and Martinson, 2003).

In summary, the telecommuting work environment is one in which employees are no longer collocated. In addition, the inherent isolation of employees working in a telecommuting work environment brings to light the need to address the perceived attitudes of employees with regard to their work environment and loyalty.

In the next section, the literature is reviewed regarding aspects of perceived employee loyalty in order to more clearly define the dynamics of the relationship between the work environment and employee loyalty.

Defining Employee Loyalty

Loyalty can be generally defined as the employee's multifaceted perception of the relationship that he/she engages in with the organization (Eskildsen and Nussler, 2000). While most individuals possess a personal definition of loyalty, these definitions are varied and based on perspective. Employees typically define loyalty as their dedication to an organization based on or regulated by their relationship with the organization. As defined by Carbone (1997), loyalty can be considered to be faithfulness to agreements made between two or more parties or behaving in a fashion that sustains or exceeds conditions that are agreed to by two or more parties. More simply, loyalty is the glue or binding of the relationship between the organization and the employee. Carbone (1997) also described loyalty to be a response or reaction to goodwill or kind behavior generated by a single person, party, or organization.

The importance and critical nature of employee loyalty is clearly of significance to organizations. The significance is evident in statements from chief executive officers that describe loyalty as a mutually beneficial relationship requiring reciprocation to retain validity and as caring without doubtful consideration or questioning of the relationship (Tiffany 1997).

These executives realize the importance of maintaining the bi-directional attribute of the relationship between the employee and the organization identified as loyalty. Labbs (1998) describes loyalty as a delicate balance of consideration between the employee and the employer. When asked to describe loyalty, the subjects in a study on loyalty conducted by McCusker and Wolfman (1998) stated that loyalty is the attitude that binds them to the organization and is the foundation of their commitment to the

organization. Satmetrix Systems (2002) considers this topic so significant to the organization that in a recent corporate white paper, they defined employee loyalty as a process where attitudes give rise to behaviors. They go on to define an attitude as a psychological tendency realized as an expression of favor or disfavor and a behavior as the action directly influenced by the attitude (Satmetrix Systems, 2002). In other words, negative or unfavorable perceptions regarding the organization can influence an employee's perception of loyalty and lead to actions that result in turnover.

Loyalty is the manifestation of the relationship between the employee and the organization that transcends current circumstances and provides longevity to the relationship (Carbone, 1997). Clancy (1999) described loyalty as people's innate requirement to become affiliated and joined with something larger than the employees themselves. "We all need a connection to something if we are to fulfill our very natures" (Clancy 1999).

The impact that an employee's loyalty has on other characteristics related to the work environment is far-reaching (Eskildsen and Nussler, 2000). While it has been suggested that an employee's perception of loyalty is directly impacted and affected by changes in characteristics of the work environment such as job satisfaction and trust, these characteristics can reciprocally be impacted by an employee's sense of loyalty to the organization. Chen (1995) indicated that an employee's loyalty level will directly or indirectly influence a myriad of other perceived factors of the work environment. Clancy (1999) describes loyalty as critical to the employees themselves and their existence within the organization. He goes on to describe loyalty as an empowering perception of

the employees that allows and encourages them to openly voice their beliefs and opinions, becoming an internal voice of the organization (Clancy, 1999).

It is hypothesized that employees will use their perception or feeling of loyalty as a foundation for the development or as a contributing factor to intent to turnover. This concept will be further explored later in this research. Chen and Kroeger (2001) supported this concept and described loyalty as the source of information that employees draw on to develop corresponding job attitude. The job attitudes affected by loyalty include job satisfaction. The relationship between job satisfaction and loyalty is considered to be reciprocal. Some studies in work commitment have suggested that organization commitment or loyalty can be correlated to levels of job satisfaction (Becker 1992, Williams and Hazer, 1986). This is demonstrated from the perspective of an employee in the evaluation of his/her job or job experiences (Locke, 1976).

Similarly, Karsh, Booske and Sainfort (2005) indicated that employee loyalty levels are the result of how employees perceive the work environment. More specifically, they related how employees perceived the job characteristics of social interaction and trust related to the work environment to directly contribute to employee commitment and loyalty (Karsh, Booske and Sainfort, 2005).

Meyer and Allen (1991) developed a model for organizational commitment or loyalty that is based on three components that they described as affective, continuous, and normative. They defined the affective component of loyalty as an employee's emotional association with the organization. The continuation component of loyalty is related to the personal costs the employee perceives are associated with leaving the organization. The normative component of loyalty is identified as the employee's sense

of obligation to the organization. The distinct nature of these components is relative to interaction with the organization (Meyers and Allen, 1991).

Loyalty levels are fluid and ever-changing. Due to the notable levels of layoffs, mergers, down-sizing, and talent wars, employee loyalty is no longer based on longevity with the organization. Satmetrix (2002) describes an employee's perception of loyalty as evolving and constantly changing. Ugboro (2006) goes on to describe this ever-changing employee commitment or loyalty as responsible and contributory to intent to turnover. He more fully describes employee commitment or loyalty as a psychological state that characterizes the relationship the employee has with the organization (Ugboro, 2006). Hajdin (2005) describes loyalty as a measurement of an employee's commitment in a relationship that is continuously and inherently in need of justification. He goes on to point out that loyalty requires continuous reciprocity (Hajdin, 2005).

This concept of continuous need for justification and reciprocity was confirmed by Howard (1998) who indicated that loyalty to the organization can be affected and diminished by an employee's sense of self worth. He also indicated that an employee's sense of self worth is based in part on how loyal the employee perceives the organization is to him/her (Howard, 1998). The importance of the organization's commitment to engender and encourage employee loyalty is apparent as declining loyalty can lead to undesired states in the relationship with the employee.

Greco (1998) described a change in an employee's loyalty for the organization as an inverse relationship. As the employee experiences declining loyalty to the organization he/she inversely experience increased levels of loyalty at a personal level. An employee's personal loyalty or loyalty to himself/herself, replaces organizational

loyalty. This higher level of personal loyalty tends to create a notable and significant entrepreneurial perspective within the employee. This entrepreneurial attitude and spirit changes the employee's perspective with regard to his/her relationship with the organization. The shift from organizational loyalty to personal loyalty typically results in higher levels of employee intent to turnover (Greco, 1998).

For the purposes of this research, loyalty is operationally defined as a dynamic indicator of an employee's relationship with the organization that is influenced by the employee's perception of work environment characteristics. These work environment characteristics that influence an employee's perception of loyalty are job satisfaction, trust, and social interaction (Karsh, Booske and Sainfort, 2005). Due to the fluid and dynamic nature of loyalty, intent to turnover is used as a surrogate indicator of employee loyalty (Hirschman, 1970; Boroff and Lewin, 1997; Lee and Whitford, 2007). This relationship is further explained in the following section.

The Relationship between Intent to Turnover and Employee Loyalty

In this section, the literature is reviewed to identify linkages between perceived employee loyalty and intent to turnover. The relationship between intent to turnover and perceived employee loyalty is examined and explained.

Karen Boroff and David Lewin (1997) describe intent to turnover as being an aspect of employee loyalty. They graphically explained their perception of the relationship that exists between Hirschman's (1970) exit (intent to turnover), voice, and loyalty. Employee loyalty is perceived to cover a range from low or poor loyalty to high loyalty. The components of Hirschman's theory (Exit, Voice, and Loyalty) indicates that

voice is an expression of employee attitudes resulting in high loyalty and that intent to turnover is an expression of employee attitudes resulting in low loyalty. Both are shown to be extreme aspects of the spectrum of employee loyalty. This relationship is shown in Figure 4.

Figure 4. The Relationship of Voice and Intent to Turnover to Employee Loyalty

Similarly, Linda Stroh, Jeanne Brett and Anne H. Reilly (1996) defined intent to turnover to be an expression of disloyalty or low loyalty. Higher loyalty was shown to be a deterrent to intent to turnover by Soo-Young Lee and Andrew B. Whitford (2007) and lower levels of loyalty were noted to be contributory to intent to turnover. Additional literature sources indicate that intent to turnover is inversely linked to employee loyalty. Hirschman (1970) explained this relationship by expounding that an employee's intent to turnover would increase as the employee's loyalty level decreases. As proposed by Meyer and Allen (1991), the continuation component of loyalty is related to an employee's perceptions regarding intent to turnover. In other words, the component of employee loyalty related to an employee's longevity with the organization is related to

the employee's attitude regarding his/her intent to turnover. Ugboro (2006) identified employee loyalty as having significant implications in the employee's decision to continue or terminate the relationship with the organization.

In summary, an inverse linkage has been shown to exist between employee loyalty and intent to turnover. The lower an employee's loyalty levels are, the greater the potential for the employee to experience a higher intent to turnover (Karen Boroff and David Lewin, 1997; Stroh, Brett, and Reilly, 1996; Lee and Whitford, 2007; Hirschman, 1970; Meyer and Allen, 1991).

As shown above, a change in employee loyalty is contributory to the employee's perception and attitude regarding intent to turnover. Thus as depicted in Figure 3,

H_0: Employee's attitudes and perceptions regarding his/her loyalty, as conceptualized being composed of job satisfaction, social interaction and trust, will affect an employee's intent to turnover, and that impact will be different based on telecommuting versus traditional work environments. } Hypothesis$_0$

In the following sections the characteristics of the work environment that are perceived to contribute to an employee's attitudes regarding loyalty were defined and examined in the literature. These characteristics include job satisfaction, social interaction, and trust.

Defining the Components of a Work Environment Related to Employee Loyalty

Reichheld (1996) identified a relationship between employee perceptions of the work environment and employee loyalty. An examination of the pertinent literature has identified several characteristics of the work environment that are given consideration by employees as they form and shape their perspective loyalty level. The characteristics identified to be part of an employee's perception of loyalty are job satisfaction, social interaction, and trust. Williams and Hazer (1986) and Becker (1992) indicated that an employee's perception regarding job satisfaction is additive to the employee's loyalty. Borzaga and Tortia (2006) described employee job satisfaction as a significant contributor to an employee's perception regarding loyalty. Matzler and Renzl, (2006) confirmed the concept that job satisfaction is perceived to be contributory or additive to an employee's loyalty.

Karsh, Booske, and Sainfort, (2005) related employee perceptions of social interaction and trust to employee commitment and loyalty. Social interaction has been identified as a contributor to the formation of an employee's sense of loyalty and propensity to leave (Salancik and Pfeffer, 1978; Chen and Kroeger, 2001; Kunda, 2006).

Matzler and Renzl, (2006) identified an influential link between employee trust and employee loyalty. Coutu (1998) described the need for employees to feel certain in the relationship with the organization as an important factor to the longevity of the relationship.

Each of these perceived work environment related attributes are examined below to determine the contribution made by each to the formation of employee attitudes regarding loyalty. Serge Lamarche, the Vice President of Client Services for ADP

Canada describes the work environment as contributory to employee loyalty (Lamarche, n.d.).

Job Satisfaction

Job satisfaction can be generally defined as a gestalt attitude that employees have about their jobs (Turner and Brown, 2004). The attitude results from the employee's perception of his/her job and the degree to which the employee perceives a good fit between himself/herself and the organization (Ivancevich, Olekalns and Matteson, 1997; Chen and Kroeger, 2001). As job satisfaction is considered to be reflective of the attitude that workers have about their jobs and the relationship between the employees and the organization, it can easily be linked and perceived to contribute to employee loyalty.

Edwin Locke (1976, 1984) identified job satisfaction to be a partial contributor to loyalty. Previously, Price and Mueller (1981) had shown in a study of teleworkers that job satisfaction served as an influence on loyalty. This was again confirmed by Mueller, Wallace and Price (1992) and by Locke (1976, 1984). In addition, as telecommuting has spread into organizations and the number of employees involved has increased, the increased significance of job satisfaction as a contributor to loyalty of telecommuters has been reported. In contrast to earlier studies, 97% of the subjects in a study on loyalty conducted by McCusker and Wolfman (1998) indicated that the most important factor contributing to their loyalty levels was job satisfaction.

In conjunction with the shift in perceived job satisfaction, the definition of job satisfaction has also changed. McCusker and Wolfman (1998) reported that the study respondents indicated that they perceived job satisfaction to include challenging and

interesting work, opportunities for advancement, personal and professional growth and development, recognition and most importantly respect. It should be noted that teleworkers report career concerns and isolation as personally and professionally inhibiting. In a study conducted with 62 managers, telecommuting employees specifically cited concerns regarding opportunities for advancement, personal and professional growth and professional development (Khan and Tung, 1997). More recently Borzaga and Tortia (2006) in a study of over 2000 public and non-profit workers identified employee job satisfaction to be among the most significant contributors to employee loyalty. Matzler and Renzl, (2006) described employee job satisfaction as a driver of employee loyalty.

In summary, job satisfaction is a reflection of how employees perceive the value of their contribution to the organization. If an employee perceives that his/her value to the organization has diminished or that he/she is experiencing any negative impact of opportunity costs associated with working in a telecommuting work environment, then the probability exists that he/she will experience a related change in perceived loyalty (Locke, 1976, 1984; Borzaga and Tortia, 2006). Due to the disconnected nature of the non-collocated work environment an employee could experience a noted change in his/her perception or attitude regarding job satisfaction. Thus as shown in Figure 3,

H_1: The work environment of telecommuters versus traditional workers can affect employee attitudes and perceptions of job satisfaction. } Hypothesis$_1$

Social Interaction

Salancik's and Pfeffer's (1978) theory of social information processing suggests that social interaction contributes to the formation of an employee's sense of loyalty, job satisfaction, and propensity to leave (Salancik and Pfeffer, 1978; Chen and Kroeger, 2001). Kunda (2006) links organizational rituals that comprise social interaction to perceived employee loyalty. The subjects in a study on loyalty conducted by Deb McCusker and Hene Wolfman (1998) indicated that the second and third most important factors identified that directly impacted their sense of perceived loyalty levels were their relationship and interaction with organizational management and interaction with their coworkers respectively. In a similar sense, Christopher Wright (1995) identified that commitment to the organization is positively and strongly associated with interpersonal organizational citizenship and loyalty. In other words, interpersonal interaction is a critical component and contributor to employee loyalty.

In summary, interpersonal interaction can be perceived as significant to employee loyalty within the organization. Clearly interpersonal interaction is one of the cornerstones of employee loyalty. Specifically, interpersonal interaction is identified as the physical connection that ties an employee to an organization. More importantly, interpersonal interaction is considered to be a contributor to employee loyalty and to intent to turnover (Salancik and Pfeffer, 1978; Chen and Kroeger, 2001; Wright, 1995; Kunda, 2006). In a collocated work environment, social interaction has been identified to be crucial to the long term development of a relationship with the employee that engenders loyalty, job satisfaction, and moderates the employee's propensity to leave. In

a non-collocated work environment social interaction clearly becomes a challenge for employees due to geographic dislocation or separation. Thus as shown in Figure 3,

H_2: The work environment of telecommuters versus traditional workers can affect employee attitudes and perceptions of social interaction. } Hypothesis$_2$

Trust

Regardless of the work environment, for employees to work effectively, they need to trust one another (Dennocenzo, 2006). Matzler and Renzl (2006) identified trust as strongly influential in the formation of employee perceptions regarding loyalty. Trust is built on empathy and shared values. It implicitly requires that an employee be able to understand circumstances from another employee's perspective. Employees need to be able to understand the motivations and underlying reasons for their coworker's behavior.

Employees need to be confident that their coworkers, management, and organization will fulfill their obligations and act in a consistent and predictable manner (Coutu, 1998). Trust can be described as the state of a relationship between employees and the organization for which they work. Trust is a relationship that evolves over a period of time.

One of the major factors in the development of trust is based on direct "face-to-face" interaction that is inherent in employee relationships in traditional work environments. Many facets of the relationship that result in building trust are relayed or communicated via body language and other attributes of physical interaction.

In a teleworking environment the opportunity for "face-to-face" interaction is limited at best, for most situations negligible, and as a rule simply does not take place. Instead of evolving slowly over a period of time, trust in teleworking environments tends to be established from the moment that an employee enters into a teleworking environment (Coutu, 1998).

Chapdelaine (1998) described trust as a result or factor of credibility. Credibility engenders and fosters trust, which encourages and cultivates freedom, which results in employee empowerment. Chapdelaine stated that in order to build a culture or relationship of trust the organization cannot expect employees to accept a relationship that requires commitment to the organization without equitable commitment from the organization. This commitment requires trust based on credibility. The employees must know that the commitment from the organization is not just a hollow verbalization. Trust of this type requires a validation of the organization's intent to be credible and trustable (Chapdelaine, 1998). Matzler and Renzl (2006) in a study of 131 subjects confirmed a substantial and influential link between employee trust and employee loyalty.

In summary, employee trust is crucial to maintaining the relationship between the employee and the organization (Matzler and Renzl, 2006). If this relationship is not maintained, it is feasible that the employees will perceive themselves as less connected to the organization. This perception of a disconnected relationship with the organization can potentially and significantly impact employee loyalty (Coutu, 1998; Chapdelaine 1998; Matzler and Renzl, 2006). As face-to-face interaction has been identified as a crucial component of employee trust in a collocated work environment, it can be theorized that a non-collocated work environment would present a challenge to

developing and maintaining employee attitudes and perceptions regarding trust. Thus as shown in Figure 3,

H_3: The work environment of telecommuters versus traditional workers can affect employee attitudes and perceptions of trust. } Hypothesis$_3$

Chapter Summary

Regardless of the structure, traditional or telecommuting, there are characteristics of a work environment that affect employee loyalty (Warr, 1990, 1994). In the traditional work environment one of the more obvious of these characteristics is interpersonal interaction. In the telecommuting work environment physical interpersonal interaction is diminished at best and non-existent in most cases. This change in interpersonal interaction can directly result in a change in employee loyalty (Salancik and Pfeffer, 1978; Chen and Kroeger, 2001; Matzler and Renzl, 2006; Wright, 1995). Changes such as this also contribute to a change in the employee's relationship with the organization (Daniels, 1999; Daniels, Brough, Guppy, Peters-Bean, and Weatherstone, 1997; Daniels, Lamond, and Standen, 2000). The result of the change in an employee's relationship with the organization can lead to a change in the level of the employee's loyalty. In turn, changes in loyalty levels can result in higher levels of employee turnover (Sagie, Birati, and Tziner, 2002; Hirschman, 1970).

Loyalty levels are critical to long term retention of employees and are critical to and inversely related to intent to turnover. As shown above, employee attitudes

regarding loyalty are impacted by employee perceptions of job satisfaction, social interaction, and trust as related to the work environment (Turner and Brown, 2004; Chen and Kroeger, 2001; Dennocenzo, 2006). These characteristics of the work environment location, which affect employee loyalty and in turn are related to intent to turnover, are components that can potentially be addressed via work design efforts. Effective work design can impact the function of an organization and more importantly employee loyalty.

As shown above, for this study the work environment components of job satisfaction, social interaction, and trust have been identified as an employee's perception of loyalty. Although literally dozens of other potential variables could have been selected for study, these appear to be the most relevant and worthy of study in this fledgling literature of collation. Because the purpose of this research is to evaluate these work environment characteristics and the resulting influence they have on intent to turnover in both a collocated and non-collocated work environment, this study includes an examination of the perceived levels of intent to turnover resulting from reported perceptions of job satisfaction, social interaction, and trust in both work environments.

In the next chapter, the research design to test the relationships derived from the literature and theory is described.

CHAPTER THREE

RESEARCH METHODOLOGY

> "A major reason that many of today's teams are ineffective is that they overlook the obvious. People do not make accommodations for how different it really is when they and their colleagues no longer work face-to-face." (Lipnack and Stamps, 1997, p. 7)

Chapter Overview

To test the hypotheses proposed in Chapter Two, empirical examination is required. The intent is to collect and analyze data to determine if employees working in a non-collocated work environment experience a decline in their loyalty to the organization. Appropriate statistical analyses will be used to determine if perceived employee attitudes regarding the factors that have been associated in the literature review with employee loyalty are affected by the telecommuting or non-collocated work environment. Intent to turnover, a surrogate indicator for employee loyalty will be examined to determine if employees' attitudes were substantially altered by exposure to the non-collocated work environment.

The focus of this effort was to assure that the empirical examination would yield results that were generalizable and make a contribution to the knowledge base and practice. In addition, this effort was undertaken with the desire to be suitable for retesting and validation by others. To accomplish the empirical examination appropriate data were needed. The components of this effort included determination of the data needed for analysis, an instrument suitable for collecting the data, selection of subjects in

the study, administration of the instrument to the subjects, and finally statistical methods suitable for testing the hypotheses via analysis of the collected data.

Substantial consideration was given to how the data should be obtained; specifically where, from whom and how should it be gathered. The ideal environment data gathering would have been one that included employees who were engaged in working in a non-collocated work environment at varying levels. In addition, the ideal environment would also have employees engaged in the same type of work in a collocated work environment. The second consideration regarding the gathering of data also needed to be addressed: the development and administration of an appropriate instrument suitable for gathering the data required. A survey instrument was determined to be the ideal and optimal instrument based on the ability to adequately administer the delivery and collection of the instrument and ability to garner the data desired for examination.

The sections following address in detail the operationalization of the constructs, specific items that were considered for selection and inclusion in the survey instrument, creation of the final instrument, how the subjects were identified and selected, the method for distribution and collection of the instrument and finally how the data were analyzed for the purposes of testing the hypotheses proposed in this study.

Introduction

This chapter describes the development of the survey instrument, scale validation, sample determination, the data collection procedure and the statistical techniques used in this study.

This study has been designed to meet two primary objectives. The first objective was to develop and examine theory regarding employee loyalty in an on-line or telecommuting work environment. This objective was accomplished utilizing a comprehensive literature review to achieve an understanding of the current status of theory. This understanding of the published literature culminated in the proposed theory regarding the influence of an on-line or telecommuting work environment on employee loyalty. The theory was developed representing three components (job satisfaction, social interaction, and trust), one moderating factor associated with the online work environment, and one indicating factor (intent to turnover) that serves as a secondary indicator of employee loyalty. These components and the moderating factor are perceived to influence employee loyalty. The indicator factor is perceived to be a surrogate of employee loyalty. Each of these components and the factor are perceived to have a relationship with an employee's loyalty.

The second objective was to design and develop an empirical test of the theory proposed by this study regarding employee loyalty in an online work environment. This was accomplished by the analysis and evaluation of survey data that were collected via an online survey instrument.

A survey instrument was selected as the most appropriate research method for securing the data. A survey instrument was described by Fink (2003) as a systematic

collection of information from or about people that describes, compares, and explains perceived attitudes and behavior. A survey methodology was appropriate for this research, since the purpose of the research is to examine the feelings, opinions, and perceptions of subjects in a work environment using non-collocated staffing. A survey methodology is particularly well suited for examining a large number of subjects who have shared experiences or communal situations or problems. Surveys are the method most used by researchers studying organizations and are also conformable to the examination and evaluation of subjects in their work environment and to the study of the effects of the work environment on them (Fink, 2003).

The survey was distributed and data collected using an online methodology. This method was used in lieu of a mail survey to minimize inconvenience of subjects and to improve the likelihood of cooperation and response.

As with any research project, subjects were obtained based on potential access and those with the insights needed to test the proposed theories. An opportunity was presented to engage subjects that are employed as faculty at a state higher learning institution that is involved in both traditional on campus-in class-face-to-face instruction and involved in non-traditional off campus online instruction. Obtaining perceptions of both groups allows for testing of differences in perceptions of loyalty with varying levels of collocation, while controlling for any spurious effects that might be due to the organization itself. That is, by using employees in one organization who are at varying levels of collocation, the effect of collocation on loyalty can be studied without concern to other overarching organizational effects that might be present using a multiple organizational study.

The survey utilized in this study included items that were identified as specifically suitable for the acquisition of information regarding characteristics or constructs of the work environment identified in Chapter Two (job satisfaction, social interaction, and trust) that are related to employee loyalty and specific social-economic demographics, such as age, gender, profession, income, and ethnicity. While the demographic data are not anticipated to be directly associated with employee loyalty, responses will be gathered to provide future researchers with a description of demographic characteristics that can be used for cross-comparison purposes, should they be needed, as well as provide possible confirmations of the sample's correspondence to known population characteristics.

Construct and Scale Item Construction

To study and analyze the proposed influence of a teleworking or online work environment on employee loyalty, the characteristics of the work environment that are thought to influence employee loyalty must be operationally defined. In this section, each construct is operationally defined and sources of the scale items used revealed.

The survey instrument used in this study was constructed by using the paradigm for developing better measures defined by Zikmund (2003), who identified the first question a researcher must answer as: "What is to be measured?" For this research, this was completed though an extensive review of the literature that resulted in the identification of the problem and the associated concept to be investigated. A variety of academic studies from engineering, philosophy, management and psychology specific to this study were reviewed and examined for their respective content. As a result of the

review of the literature, conceptual specifications of the constructs determining what should be included in each of the domains of the study were developed. Zikmund dictates that the concepts relevant to the problem studied must be identified prior to the initiation of the measurement process. Zikmund defines a concept (or construct) to be a generalized idea about a set of attributes (Zikmund, 2003). The concepts relevant to the problem studied in this research were defined in Chapter Two.

With the identification and definition of the constructs, a substantial pool of items consisting of statements and questions was generated for the survey instrument. Items were specifically selected that enveloped the domain of the defined constructs. The items related to job satisfaction, trust, social interaction, intent to turnover and specific demographics were utilized from other research efforts. The origin of each item will be explained later in this chapter. Each item was reviewed to assure appropriateness, understandability, clarity, and effectiveness for retrieving the desired response. Items were also reviewed and evaluated for social desirability. Items were modified and corrected as necessary to assure understandability, appropriate wording, and eliminate any ambiguity and unneeded duplication. Specific changes to items that were modified will be discussed later in this chapter. Upon completion of this effort the survey item pool was operationalized as a measurement instrument.

Groups of items were assembled for determining a subject's group membership (face-to-face or online), each of the constructs in conjunction with the construct's operational definition, and demographic information on each subject. Each construct was addressed as described in the following sections.

Group Determination

In order to test the hypothesis identified in Chapter Two, two groups were required; a group that worked in a face-to-face environment and a group that worked in an online environment. Group determination is operationally defined to be based on the extent to which a participant worked in a specific work environment. The items were designed to divide the subjects into two sample groups. These sample groups are anticipated to provide a substantial representation of faculty that either works in a traditional educational environment that meets face-to-face and teleworking faculty that work in an off campus nontraditional educational environment, in this case teaching courses online.

The first sample group was the collocated or face-to-face group. This group was identified as the faculty who taught in a traditional work environment (i.e., not through teleworking). Specifically, this group was comprised of instructors who only teach face-to-face as previously defined.

The second sample group was the online group. The online group was comprised of instructors who taught in an online work environment (i.e., teleworking). Specifically, this group was comprised of instructors who only teach online as previously defined.

It should be noted that both groups were comprised of faculty members that teach a minimum 75% of the time in a specific work environment. As full time faculty status is designated as teaching 5 courses, the demarcation of 75% was selected to capture data from faculty members whose primary role is teaching predominantly in a specific work environment.

The selection process (method used) to determine membership in either the face-to-face group or online group was conducted using a dual layered screening technique within the data collection survey instrument. The first layer or item was used to insure that the faculty member was a full time faculty member as previously defined. The second layer or item determined the working environment and confirmed that the participant worked 75% or more in a specific work environment. Additional items were utilized to gather information regarding involvement in a specific work environment. The items used for collecting information regarding group membership are shown in Table 1. Several of the items in this section were derived from two items used in a dissertation by Mary McCarthy on role conflict experienced by telecommuting workers (McCarthy, 2001). Fink notes that the viability of survey items utilized from other sources with minor modifications is typically not affected (Fink, 2003). The original form of the items that were modified is shown in Table 2. These items were modified to be applicable to the subject's work environment. The modifications were minor and were not considered as a functional alteration to the structure or intent of the item. In several of the items the terms telework or online environment were substituted for homework or telework option to make the item more applicable.

Table 1. Group Determination Items as Modified for Survey

I am a full time faculty member. Yes ___ No ___
Are you presently teaching at least 75% of the time in a telework or online environment? Yes ___ No ___
How long has it been since you started teaching in a teleworking or online environment? ___ Months ___ Years
How much time on average are you working in a teleworking or online teaching environment? Time per week? ____ % Days per week? ____
Are you presently teaching at least 75% of the time in a traditional face-to-face teaching environment? Yes ___No ___
How long has it been since you started teaching in a traditional face-to-face teaching environment? __ Months__ Years
How much time on average are you working in a traditional face-to-face teaching environment? Time per week? ____ % Days per week? ____

Table 2. Unmodified Group Determination Survey Items
(McCarthy, 2001)

How much time, on average are you working in your home per week as part of the home work or telework option? Number of days per week ___.
How long has it been since you started the home work (telework) option?

Job Satisfaction

Job satisfaction is operationally defined to be the quality of the relationship that the employee perceives to exist between him/her and the job (Ivancevich, Olekalns and Matteson, 1997; Chen and Kroeger, 2001). Job satisfaction is perceived to be dynamically fluid and dependant on the employee's attitude regarding his/her job or work environment. Job satisfaction can be expressed as the continuum of the employee's perception of his/her ability to interact with the work content and the work environment (Herzberg, 1982). For example, an employee with high job satisfaction sees himself/herself as working in a position of responsibility completing meaningful work that results in recognition of his/her achievements. He/she is eager to engage in the work environment and to be at work. In contrast an employee with low job satisfaction thinks

of himself/herself as an underutilized employee that is doing menial unchallenging work and is well below the radar scope of management's recognition. This employee's involvement at work is primarily based on personal need for compensation. He/she does not desire to be involved with or associated with the work environment. For the purposes of this study it was important to determine the attitude of the subjects regarding job satisfaction with respect to this operational definition.

To garner information from the participating subjects regarding job satisfaction as defined, suitable survey items were identified and adapted for this research. The items used for collecting information regarding job satisfaction are shown in Table 3. These items were derived from Hackman's & Oldham's job satisfaction survey without modification (Hackman and Oldham, 1980). Subjects were asked to respond to each of the items utilizing a nine-point Likert scale where 1 equals extremely disagree or extremely low and 9 equals extremely agree or extremely high.

Table 3. Job Satisfaction Survey Items

My opinion of myself goes up when I do this job well.
Generally speaking, I am very satisfied with this job.
I feel a great sense of personal satisfaction when I do this job well.
The work I do on this job is very meaningful to me.
I feel bad and unhappy when I discover that I have performed poorly on this job.
I feel I should take the credit or the blame for the results of my work on this job.
I am generally satisfied with the kind of work I do in this job.

Social Interaction

Social interaction is operationally defined to be the "face-to-face" interaction that workers experience in the completion of their work (Salancik and Pfeffer, 1978; Chen and Kroeger, 2001). Social interaction is perceived to be the mixture of the employee's relationship and interaction with organizational management and interaction with his/her coworkers respectfully (McCusker & Wolfman, 1998). Examples of social interaction include "water-cooler" discussions, lunch with colleagues, and the face-to-face interaction that leads to the development of relationships and becomes the gel that cements the employee to the organization. For the purposes of this study it was important to determine the attitude of the subjects regarding social interaction with respect to this operational definition.

To garner information from the participating subjects regarding social interaction as defined, suitable survey items were identified and adapted for this research. The items used for collecting information regarding social interaction are shown in Table 4. These items were derived from McCarthy (2001) and were modified from the original items shown in Table 5. The items were modified to be applicable to the subject's work environment. The modifications were minor and were not considered as a functional alteration to the structure of the item. The minor changes made in several of the items included substituting the terms student(s) and classroom for coworkers and office to make the item more applicable. Subjects were asked to respond to each of the items utilizing a nine-point Likert scale where 1 equals extremely disagree or extremely low and 9 equals extremely agree or extremely high.

Table 4. Social Interaction Survey Items as Modified for Survey

Do you find yourself missing the regular face-to-face contact you used to have with your coworkers and students?
How does it feel when you go into the office? Do you feel like you are missing out on information? Do you feel like your opportunity for advancement is negatively affected as in "out of sight, out of mind"?
How does it feel when you teach in an online classroom? Specifically do you find yourself missing the regular contact you used to have with your students?
How has working in a telework or online teaching environment affected your ability to communicate with coworkers?
How has working in a telework or online teaching environment affected your ability to communicate with students?

Table 5. Unmodified Social Interaction Survey Items
(McCarthy, 2001)

Do you find yourself missing the regular contact you used to have with your coworkers?
How does it feel when you go into the office? Specifically do you feel like you are missing out on information? Do you feel like your opportunity for advancement is negatively affected as in "out of sight, out of mind"?
With regard to teleworking: Do you find yourself missing the regular contact you used to have with your coworkers?
How has teleworking affected the way of means through which you communicate with others in the office?
How has teleworking affected the way or means through which you communicate with others in the office?

Trust

Trust is operationally defined to be the firm belief or confidence in the honesty, integrity, reliability, and faith that an employee perceives and experiences in the relationship with the organization (Coutu, 1998). Trust can be described as the state of a relationship between employees and the organization they work for as the employees believe it to exist. An employee will experience a high trust level if he/she believes that the integrity of the relationship he/she shares with the organization has not been compromised. As the employee's belief in the integrity of this relationship wanes, then his/her trust level diminishes. For example, an employee who has been promised an increase in compensation and received it within a reasonable time frame will have a high

trust for the organization. However, an employee who has been repeatedly promised an increase in compensation and even after several inquiries regarding the increase has not received it will experience a low trust level with regard to the integrity of his/her relationship with the organization. For the purposes of this study it was important to determine the attitude of the subjects regarding trust with respect to this operational definition (Coutu, 1998; Chapdelaine 1998; Matzler and Renzl, 2006).

To garner information from the participating subjects regarding trust as defined, suitable survey items were identified and adapted for this research. The items used for collecting information regarding trust are shown in Table 6. These items were derived from Philippe (2002) on corporate hypocrisy. These items were used without modification to determine an employee's trust level with regard to the organization.

Table 6. Trust Survey Items

I trust that my organization has my best interests at heart.
There is a difference between what my organization says and what it does.
The organization says things that I do not expect to happen.
I believe that my organization is fair.

Intent to Turnover

Intent to turnover has been operationally defined as a surrogate indicator of employee loyalty (Karen Boroff and David Lewin, 1997; Stroh, Brett, and Reilly, 1996; Lee and Whitford, 2007; Hirschman, 1970; Meyer and Allen, 1991). An employee's intent to turnover is inversely linked to employee loyalty. As an employee's loyalty levels decrease, the employee's intent to turnover typically increases (Hirschman, 1970). Intent to turnover is the measurement of an employee's desire to separate from the

organization regardless of the reason (Hirschman, 1970). For example, an employee with a high desire or intent to turnover as a result of a low loyalty level will leave the organization at the earliest acceptable opportunity. An employee with a low intent to turnover as a result of a high loyalty level, most likely will not leave the organization in the near future or possibly at all (Hirschman, 1970). For the purposes of this study it was important to determine the attitude of the subjects regarding intent to turnover with respect to this operational definition (Hirschman, 1970).

To garner information from the participating subjects regarding intent to turnover as defined, suitable survey items were identified and adapted for this research. The items used for collecting information regarding intent to turnover are shown in Table 7. These items were used unaltered from a longitudinal study by Kelloway, Gottlieb, and Barham (1999) regarding the telecommuting work environment and family conflict.

Table 7. Intent to Turnover Items

I am thinking about leaving this organization.
I am planning to look for a new job.
I intend to ask people about new job opportunities.
I don't plan to be with this organization much longer

.

Demographic Characteristics

General demographic information was collected for future researchers and to establish validity of the derived sample. The information was collected utilizing unaltered items from McCarthy (2001), so as to allow easy comparison across studies. The items used for collecting demographic information are shown in Table 8.

Table 8. Demographic Items

Gender: Male ____	Female ____
Which range reflects your current age?	
____ 24 to 30 years	____ 46 to 50 years
____ 31 to 35 years	____ 51 to 60 years
____ 36 to 40 years	____ 61 and above
____ 41 to 45 years	
What is the highest level of education your have completed?	
____ Bachelors Degree	____ Honors Degree
____ Post Graduate Study	____ Masters Degree
____ Doctorate Degree	
Marital Status	
____ Single	
____ Married/Living with partner	
____ Divorced/Separated	
____ Widowed	
If you have a partner, what is his/her	
Occupation _____	
What is your employment classification or job title? _____	
How long have you been working for the organization/institution?	
___ Years	
___ Months	

Survey Instrument Construction

Using the scale items listed above and items related to demographic characteristics, the survey instrument was created. This section describes the issues used in creating the survey to ensure valid and reliable data and, thereby, dependable results.

For this study a nine point Likert scale was used to allow for finer distinctions in options than offered by a five or seven point scale. It was also anticipated that the use of the nine point scale would provide a greater level of insight into the respondents' attitudes regarding the identified constructs (Cox, 1980).

Response bias occurs when a subject's responses either consciously or unconsciously answer in a certain direction or pattern. Any resulting distortion in the

measurement due to the respondents' answers for whatever reason being falsified or misrepresented is a form of error known as response bias (Zikmund, 2003). To address the possibility of occurrence of pattern response bias, a portion of the survey items were subjected to additional refining efforts. Refining efforts to avoid response bias included recasting some items into reverse worded biased statements. The rewording of items served to limit a subject's tendency to respond to the items with similar responses and also tended to keep the subjects alert and engaged with the items (Churchill, 1979). The items shown in Table 9 were originally cast into reverse worded biased statements. They were adopted for this research without modification. The rating for these items was reversed (larger numbers mean more) to simplify interpretation and analysis. The first item in Table 9 is item numbers 12 from the job satisfaction section of the survey and the second two items in Table 9 are item numbers 22 and 23 from the trust section of the survey.

Table 9. Reversed Worded Items

I feel bad and unhappy when I discover that I have performed poorly on this job.
The organization says things that I do not expect to happen.
I believe that my organization is fair

Scale reliability and validity analysis is discussed in greater detail in conjunction with the results in Chapter Four through empirical analysis.

The data collection survey instrument is constructed in three basic components or sections. The first component is a two layer filtering of subjects to insure their inclusion in the appropriate sample group; the face-to-face group or the online group. The second

component is the composition and operationalization of the three theoretical constructs (job satisfaction, social interaction, and trust), the moderating factor (involvement in the work environment) and the surrogate indicator (intent to turnover) for employee loyalty. The measurement items of the second section require an individual response from each of the subjects regarding the level or magnitude to which he/she agrees or disagrees with the topic of the item. The statements are rated with a nine point Likert scale. The responses of the subjects indicated their perspectives on how each item related to their relationship to their specific work environment. The third section includes items that focus on determining the specific demographic information of each individual respondent.

Study Subjects

The subjects used for this study were faculty at a four year college in the state of Florida. The faculty group targeted included instructors involved in "on campus traditional in class, face-to-face instruction" and instructors significantly involved in "online instruction." Faculty members who work only in a traditional environment were included in the survey to serve as the face-to-face group. Instructors who engage in telework or online instruction are included in the survey to serve as the online group, i.e., "non-collocated." These two sample groups are anticipated to provide a substantial representation of faculty that either works in a traditional educational environment that meets face-to-face and teleworking faculty that work in an off-campus nontraditional educational environment.

The online group was comprised of instructors who teach at a minimum 75% of the time in an online work environment, as previously defined. The experimental treatment was defined as the online work environment.

The selection process to determine membership in either the face-to-face group or online group was moderated using a dual layered screening technique within the data collection survey instrument. A target of 50 responses from each of the groups was determined to be sufficiently large sample to test for meaningful differences across the groups on the key dependent variable, intention to turnover. A minimum sample size of 30 is considered to be sufficient for the law of large numbers to activate (Nunnally, 1970).

To confirm the effect of the online work environment on employee loyalty, faculty teaching in both a traditional face-to-face work environment and an online telecommuting work environment were evaluated and compared. The evaluation and comparison was conducted on employees that comprise specific sample groups. Membership in a specific sample group was determined by identifying if faculty members were working in either a traditional work environment or a telecommuting work environment as defined in the following operational definitions.

The first sample group is operationally defined as full time permanent faculty teaching in person 75% or more of the time on campus. This group will serve as the face-to-face group for this research.

The second sample group is operationally defined as full time permanent faculty teaching a minimum of 75% or more in an online work environment. This group will serve as the online group for this research.

It should be noted that this researcher's affiliation and relationship with this institution enabled participation of the faculty in this study. In addition, the relationship also facilitated the solicitation of the subjects' cooperation and response rates. While the researcher's affiliation may have biased cooperation in a positive direction, there is no compelling reason to believe that the affiliation biased responses or had any halo effect as the survey items are unrelated to the researcher's area of responsibility. In addition, all responses were anonymous, and the researcher does not have managerial control over any of the subjects.

Pilot Study

Once the measurement instrument was completed, a pilot test was conducted to assure the viability of the instrument. The pilot test included a limited panel of subjects from the participating institution that fit the operational definition of both the face-to-face group and the online group of respondents. During the pilot study the instrument was administered in person. The pilot study yielded a significant understanding regarding the appropriateness of the measurement instrument. The administration of the pilot study allowed each participant to be interview after completing the survey to determine his/her perception and understanding of the item in view of the intent of the item. This allowed for a final critique of each item for understandability and appropriateness. In addition, the pilot study also provided an indication and assurance of the relevancy of each item as it relates to the theoretical constructs. The time required to complete the instrument was measured at between ten and fifteen minutes, a range suitable for cooperation needed for desirable completion and response levels.

Data Collection

The data collection was completed via an on-line survey provided to the two sample groups comprised of faculty that work in a traditional in-class environment and faculty who work in a telecommuting or online work environment. The survey consists of scale items described above regarding each of the identified independent constructs (job satisfaction, social interaction, and trust) and the dependent construct (intent to turnover), as well as demographic classification variables.

Also as described above, the respondents in this study are faculty members employed full-time by a four year college in the state of Florida that participates in both traditional and teleworking environments. The basis for selecting this group for data collection is that this institution employs faculty that are currently engaged in a full-time, permanent capacity, working in their respective work environments in accordance with the operational definitions provided earlier in this chapter. As a notable number of the faculty employed at this institution possess graduate degrees, these subjects were considered capable of producing the data sets and desired number of responses required. The number of subjects in each of the sample groups was sufficient to perform the desired statistical analyses (Nunnally, 1970).

The sampling process that was utilized in this study is to administer the survey via an online delivery system. The online survey instrument was developed utilizing Zoomerang's survey tool. The survey was distributed and collected utilizing an online delivery system. It is possible that using an on-line format for data collection could bias the research slightly toward those subjects who are more comfortable with computer-based communication. The Zoomerang survey mechanism is used for many other

purposes on the campus and is a common format today for collecting survey responses. As such, the potential for bias should not be of such magnitude to warrant concern.

Participation in this study was completely voluntary with all responses remaining anonymous. As with all research, there was a concern regarding the existence of any non-response bias associated with survey data. Non-response bias refers to the concept that the perception of the subjects that respond could be different from the perception of the subjects that did not respond (Armstrong and Overton, 1977; Lambert and Harrington, 1990). As the survey instrument was conducted anonymously, it was not possible to solicit a response from non-respondents. Nevertheless, non-response bias will be discussed in Chapter Four based on comparisons of demographics of early and late respondents. The responses were received in response to two separate solicitations. The solicitations were issued approximately one month apart.

Survey Instrument

The online survey instrument was developed using scale items described above. A printed version of the final survey instrument is contained in Appendix A. The survey included appropriate instructions including the completion of the survey and the return of the survey.

The first section of the measurement instrument, items 1 – 9, is a dual layered set of items designed to determine a respondent's membership in either the sample group comprising the face-to-face group or the sample group comprising the online group. In addition, this set of items also, in the case of online instructors, determines their tenure and frequency in the online work environment.

The second section of the measurement instrument is comprised of items related to the three constructs, the moderating factor and the surrogate indicator regarding employee loyalty.

The remainder of the measurement instrument is comprised of items necessary to develop the respondent's perceived individual characteristics and associated demographics. These included gender, age, and highest level of education, and a response with regard to the moderating factors of tenure and frequency of telecommuting or online work.

The items for section two were written as statements in which the subjects responded on a 9-point Likert scale. For items 10 through 18 and 22 through 27 the responses were identified as indicated in Figure 5 below.

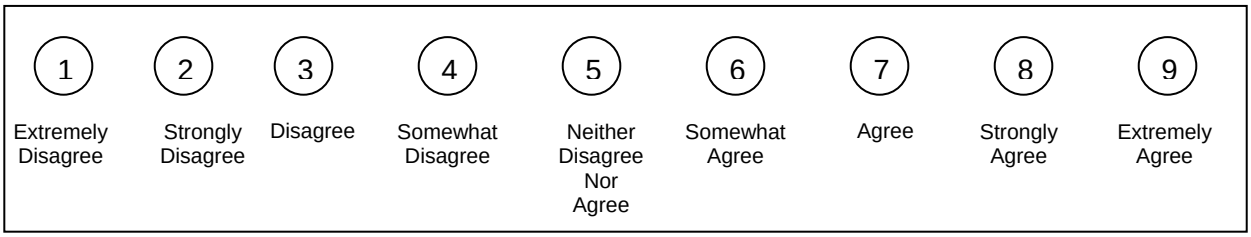

Figure 5. Likert Scale

For items 19 through 21 the wording for the responses to each item was modified for appropriateness as indicated in Figure 6 below.

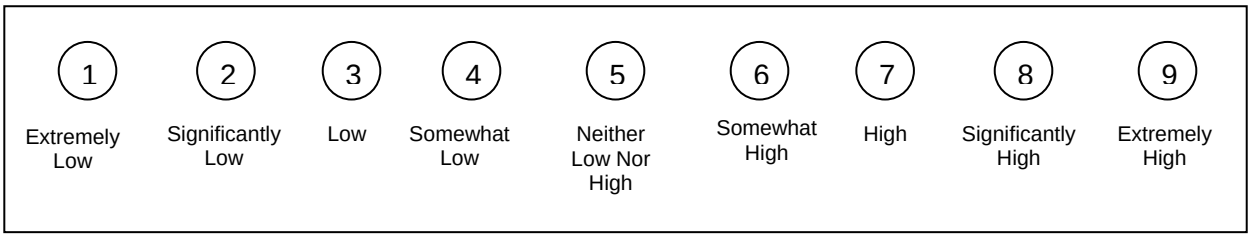

Figure 6. Modified Likert Scale

Validity

Validity assessment is crucial to the determination of how accurately the chosen indicators measure a particular construct. Measure validity can be divided into three classifications; content validity, criterion validity, and construct validity. Content validity is associated with the domain of content, criterion validity is associated with the accuracy of the study outcome, and construct validity is associated with accurate measurement of traits and other participant characteristics (Pedhazur and Schmelkin, 1991).

Content Validity

For the purpose of this study, content validity refers to the assessment of the instrument's suitability to accurately reflect what it is intended to study. Content validity is assured through a comprehensive review of the literature and theory to determine that the study captures variables and content needed to guarantee readers that the study's conclusions are relevant and cover the current status of theory and explanation of the phenomena studied (Zikmund, 2003). The thorough review of the literature as presented

in Chapter Two served as the underpinning of the study and provides assurance that the study does cover variables considered by experts to be relevant to issues surrounding loyalty in the workplace. The subjects in the pilot study examine, appraise and confirm the items to be appropriate indicators of the study's constructs. The researcher's extensive work experience in working closely in technology utilization in collocated environments also confirms that the study captures the content needed to understand the impact of collocating. Utilizing accepted methodologies, the constructs identified in this study are appropriately generated with content validity.

Criterion Related Validity

Criterion related validity can be described as predictive validity. "Predictive validity is established when an attitude measure predicts a further event" (Zikmund, 2003, p. 303). In this study criterion-related validity is the extent to which the constructs of the work environment that are perceived to affect loyalty are associated with the measured outcome. For the purposes of this study, criterion validity is to be established via theory and previous research that document the interaction and relationships between and amongst trust, social interaction, job satisfaction, loyalty and intention to quit one's job. Readers can be assured that the impact of collocating on the key variable in the study, loyalty, results from capturing phenomena commonly studied and analyzed in this general context.

Construct Validity

Construct validity is confirmed by the level to which the measure confirms a hypothesis generated from a theory based on a concept. Construct validity is established as a result of the statistical analysis of the data collected (Zikmund, 2003). Construct validity can also be characterized as the extent to which the empirical evidence reflects that the items in a scale measure the same construct. In the simplest terms, if the items studied follow a pattern of inter-correlation with other variables then there is a substantiation of construct validity (Zikmund, 2003). Because this study uses scales validated in previous research, construct validity should not be of concern. Construct reliability, a minimum standard for construct validity, will be examined in Chapter Four through empirical analysis.

Statistical Analysis

To test the hypotheses outlined in Chapter Two, statistical analyses will be conducted to ascertain if a meaningful difference exists between the face-to-face group and the online group on perceived loyalty to the organization. Statistical testing of differences across classification groups is appropriately conducted using analysis of variance (ANOVA) and in the case of multiple variables MANOVA. Regression analysis, a specific test of linear relationship in data, is one type of analysis of variance. As such, the statistical analysis described in Chapter Four will be based on ANOVA, MANOVA or regression analysis, as is appropriate.

Data collected in this study are essentially ordinal level data, meaning that the intervals between scale points are not necessarily equidistant. Nevertheless, regression

analysis is robust against violations in the assumption that all data are interval level. It is common practice in social science research to use regression analysis on data obtained through Likert-type scale points.

The most appropriate statistical analysis methodology for this study is multiple linear regression analysis, as it allows for the simultaneous investigation of the effect of several independent variables such as job satisfaction, trust, social interaction, and a moderating factor on a single interval scaled dependent variable, such as loyalty as represented by intent to turnover (Zikmund, 2003). Multiple linear regression analysis is well suited for the analysis of the variance of interval scaled data associated with both the independent and dependent variables. Appropriate t-test, F-test, and other analysis will be preformed on the data collected (Zikmund, 2003). Chapter Four presents the results of statistical analysis.

Chapter Summary

The purpose of this chapter was to define the process utilized to generate the measurement instrument. The measurement instrument was designed and developed in keeping with and founded on constructs that were identified within the academic literature. The pilot study was included to evaluate, improve, and clarify the appropriateness of the measurement instrument. The chapter concluded with a brief description of the sample and the methodology including distribution and retrieval of the survey instrument and data collection processes, appropriate components of validity and the statistical techniques selected for use in the evaluation and assessment of the data collected.

CHAPTER FOUR

ANALYSIS

> "Loyalty is the gold standard for measuring the quality of a relationship. True loyalty endures through the best of times and the worst and melds mutual interests into shared goals." (Reichheld, 2001, p. 5)

Chapter Overview

This chapter provides the empirical testing of the hypotheses revealed in Chapter Two. In addition to examining the relationships uncovered regarding each hypothesis, this chapter also examines the sample and measurement characteristics of the data, so as to ensure that no unnecessary contamination or corruption of the data has occurred and that the results reported are dependable based on the data's quality. These efforts were accomplished via an examination of the delivery and retrieval of the survey instrument, a thorough inspection of the data, appropriate treatment of any potential coding errors, proper addressing of potential response bias, presentation of the responses, and completion and reporting of statistical analysis.

The data examination and statistical analysis that were completed included a visual inspection of the data to identify any un-thoughtful responses, such as a "Christmas Tree" or all nines responses. Un-thoughtful responses are perceived by the researcher to not provide a viable representation of the participant's perceptions regarding the independent variable and the dependent variable. The data were found to be free of such responses.

Paired t-tests were conducted for each survey item based on early and late responders to identify any potential non-response bias. The results of the t-tests indicated that there were no compelling reasons to believe that any non-response bias was significant enough to influence the results of the survey.

The demographic data were reviewed and tabularized for a clearer understanding of the respondents. The data revealed a population profile similar to the known profile of the population, using a Kolmogrov-Smirnoff Test.

Factor analysis was completed on each multi-item scale to determine the unidimensionality of each scale, and therefore to validate the use of each scale in further regression analysis. The result of these analyses confirmed the internal integrity of each subscale construct and its unidimensionality.

Once summates were created for subscales a correlation matrix was created to examine the independent, unidirectional relationship between constructs, and Cronbach's Alpha was calculated as a final test of reliability. Then, a regression analysis, which included all job loyalty variables studied (job satisfaction, social interaction, and trust), were conducted to determine if these aspects of job loyalty contributed an employee's intent to turnover based on membership in a telecommuting or traditional work environment. Regression analysis allows for simultaneous examination of relationships, while allowing for variance due to the influence of other subscales. The results of each of these statistical examinations are explained in the following sections.

Distribution and Collection of the Survey Instrument

Over a three-month time span the survey instrument was made available to the 222 full-time faculty members at the participating institution. The distribution and collection occurred in two waves. The first distribution event occurred in October 2007 and resulted in 76 responses. Due to the waning of responses and a desire to have a larger response rate, a second distribution was initiated approximately a month later in November of 2007, with an encouragement for any members of the population set that had not previously responded to do so at that time. The second distribution resulted in 27 additional responses. A total of 103 responses from the then current sample population of 222 were received following the procedure outlined in Chapter Three. This corresponds to a 46.4% response rate. This response rate is considered acceptable for such survey research and is sufficiently large to warrant further analysis, assuming the sample is representative of the overall population. To ensure representativeness of the overall population and the trustworthiness of the data further analyses were conducted.

Non-response Bias

As stated in Chapter Three, non-response bias refers to the concept that the perception of the subjects that respond could be different from the perception of the subjects that did not respond (Armstrong and Overton, 1977; Lambert and Harrington, 1990). To identify potential non-response bias, paired t-tests were conducted on survey items 10 – 29 that specifically addressed the areas of job satisfaction, social interaction, trust, and intent to turnover, the key variables used in hypothesis testing, as well as key demographic variables. As suggested by Armstrong and Overton (1977), the paired t-

tests were conducted using the data collected from the first 25% of the respondents and the last 25% of the respondents. The results of the t-tests are shown in Table 10. The t-tests were conducted on the first 26 and last 26 responses received for each survey item by comparing the means of the responses. As can be seen in Table 10, all values of the calculated t-statistics are less than the t-critical value at a confidence level of 95%. Overall, the results of the t-tests indicate that there is no statistical difference in the means of the first 26 respondents when compared to the last 26 respondents. Therefore there is no compelling reason to believe that any notable amount of non-response bias exist in the data. As such, non-response bias was eliminated as a potential concern.

Table 10. T-tests of First 25% and Last 25% of Respondents

Items	No. of Resps.	Mean	Var.	Obsrvs.	Pearson Cor.	Hypoth. Mean Diff.	df	t Stat	P(T<=t) two-tail	t Critical two-tail
Type of Env	First 26	1.38	0.2462	26	-0.329	0	25	-1.99	0.05762	2.05954
	Last 26	1.69	0.2215	26						
Yrs Wkg in Env	First 26	14.9	158.87	26	-0.07	0	25	1.445	0.16086	2.05954
	Last 26	9.92	132.07	26						
% of Time in Env	First 26	0.86	0.0095	26	0.2088	0	25	0.4367	0.66606	2.05954
	Last 26	0.85	0.0064	26						
Days per wk	First 26	4.46	8.6585	26	0.5208	0	25	-0.775	0.4457	2.05954
	Last 26	4.85	1.4954	26						
10	First 26	7.73	1.6446	26	-0.204	0	25	-0.586	0.56323	2.05954
	Last 26	7.92	0.7138	26						
11	First 26	7.85	0.3754	26	0.6237	0	25	1.5475	0.13432	2.05954
	Last 26	7.65	0.6354	26						
12	First 26	7.88	0.5862	26	-0.12	0	25	0.8167	0.42181	2.05954
	Last 26	7.69	0.7015	26						
13	First 26	7.19	1.5215	26	0.7567	0	25	-1.69	0.1034	2.05954
	Last 26	7.5	1.94	26						
14	First 26	7.04	2.6785	26	-0.179	0	25	0.953	0.34972	2.05954
	Last 26	6.58	2.4938	26						
15	First 26	7.85	1.3354	26	-0.261	0	25	0.1347	0.89389	2.05954
	Last 26	7.81	0.4015	26						
16	First 26	5.5	1.78	26	0.1894	0	25	0.7354	0.46893	2.05954
	Last 26	5.23	2.5046	26						
17	First 26	5.65	1.9154	26	0.0543	0	25	-0.29	0.77395	2.05954
	Last 26	5.77	2.4246	26						
18	First 26	6.27	2.6046	26	0.1404	0	25	0.7362	0.46846	2.05954
	Last 26	5.96	2.6785	26						
19	First 26	5.69	2.3815	26	0.2496	0	25	0.6895	0.49688	2.05954
	Last 26	5.42	2.8938	26						
20	First 26	5.96	2.4385	26	0.3092	0	25	0.892	0.38089	2.05954
	Last 26	5.62	3.2062	26						
21	First 26	6.42	2.9738	26	0.0813	0	25	0.6237	0.53847	2.05954
	Last 26	6.15	2.2954	26						
22	First 26	4.81	1.6015	26	-0.142	0	25	0.5448	0.5907	2.05954
	Last 26	4.58	2.4938	26						
23	First 26	6.77	1.1446	26	-0.009	0	25	0.4709	0.64181	2.05954
	Last 26	6.62	1.6062	26						
24	First 26	6.46	1.6185	26	0.5409	0	25	0.1532	0.87946	2.05954
	Last 26	6.42	1.9338	26						
25	First 26	5.42	1.5338	26	0.0075	0	25	0.7621	0.45311	2.05954
	Last 26	5.15	1.7354	26						
26	First 26	4.69	3.5015	26	0.5003	0	25	0	1	2.05954
	Last 26	4.69	4.3015	26						
27	First 26	4.62	4.9662	26	0.4365	0	25	0.167	0.86868	2.05954
	Last 26	4.54	4.8185	26						
28	First 26	4.81	4.2415	26	0.5526	0	25	0.0996	0.92147	2.05954
	Last 26	4.77	4.4246	26						
29	First 26	4.5	4.42	26	0.3789	0	25	0	1	2.05954
	Last 26	4.5	5.22	26						
Gender	First 26	1.46	0.3385	26	-0.283	0	25	0 2252	0.82366	2.05954
	Last 26	1.42	0.2538	26						
Age	First 26	4.31	4.0615	26	-0.051	0	25	1.5115	0.14321	2.05954
	Last 26	3.42	4.4138	26						
Education	First 26	4.12	1.4662	26	-0.143	0	25	-1	0.32689	2.05954
	Last 26	4.38	0.2462	26						
Marital Status	First 26	1.62	0.5662	26	0.341	0	25	-0.647	0.52334	2.05954
	Last 26	1.73	0.6846	26						
Yrs at Institution	First 26	10.7	66.925	26	-0.025	0	25	1.6823	0.10495	2.05954
	Last 26	7.15	47.815	26						

Representativeness of Sample

To further ensure that non-response bias is not present, demographic information was collected via the survey for the purposes of identifying any potential statistical significance related to demographics such as gender, age, and education, (see Table 11) and the resulting profile was compared to the known characteristics of the population provided by the participating institution.

Table 11. Demographic Responses

Demographic Information	Response
Male	42
Female	57
Non-Responsive Regarding Gender	4
College Degree	101
Bachelors	7
Masters	56
Ph.D.	38
Non-Responsive Regarding College Degree	2
Mean Age	44.2
24 – 30 Years Old	8
31 – 35 Years Old	7
36 – 40 Years Old	8
41 – 45 Years Old	13
46 – 50 Years Old	24
51 – 60 Years Old	29
61 – Older	9
Non-Responsive Regarding Age	5
Mean Number of Years at Institution	10.7
Range of Years at Institution	1-34
Non-Responsive to Number of Years at Institution	7
Mean Number of Years Teaching On-Line	5.4
Range of Years Experience Teaching On-Line	1-13
Non – Responsive to Years of Experience Teaching On-Line	3
Mean Number of Years Teaching Face-to-Face	19.8
Range of Years Experience Teaching Face-to-Face	1-40
Non – Responsive to Years of Experience Teaching Face-to-Face	2

To ensure that the sample is similar to the known population, the Human Resources Department of the participating institution was contacted for any known population characteristics on any of the descriptive statistics collected in the study. Unfortunately,

only gender and education levels are collected and publicly available. These two variables were available for comparison; a Kolmogrov-Smirnoff (K-S) test was executed. The K-S test, a nonparametric statistical technique, was used because the comparisons are made from two different sets of data with potentially different response functions and underlying distributions. The K-S test is considered to be appropriate and conservative when comparing data from two studies. The Kolmogorov–Smirnov statistic provides quantification between the distribution of the survey sample and the distribution of the known reference sample. This statistic is calculated based on the concept that the samples are drawn from and representative of the same distribution. The two-sample K-S test is one of the most useful and general nonparametric methods for comparing two samples, as it is sensitive to differences in both location and shape of the empirical cumulative distribution functions of the two samples (Adams, 1977).

The Human Resource Department provided the information shown in Table 12. It should be noted that at the time of the distribution of the survey the total number of full time faculty was 222. The data provided by the Human Resource Department is comprised of annual totals.

Table 12. Human Resource Data

Information Provided By Human Resources	
Gender (Full Time Faculty Only)	
Male	136
Female	180
Education (All Faculty)	
Bachelor's	37
Master's	228
Doctorate	121

The demographic information provided was utilized to complete a Kolmogrov-Smirnoff test of comparison to the survey data. Two tests were completed on first the gender information (Table 13) and then the education/degree earned information (Table 14).

Table 13. K-S Test on Gender

Data Entry				Sums
Category	Observed Frequency	Expected Frequency	Expected Proportion	Observed Frequency
Female	57	56.3924050	0.56962025	99
Male	42	42.6075949	0.43037974	Expected Frequency
				99
				Expected Proportion
				1.0
Cumulative Proportions				
	Observed	Expected	| O - E |	Dmax
Female	0.576	0.57	0.006	0.006
Male	1.0	1.0	0	
Critical Values of Dmax for n = 99				
Level of Significance (non-directional)				
0.05	0.01			
0.1367	0.1638			

Table 14. K-S Test on Degree

Data Entry				Sums
Category	Observed Frequency	Expected Frequency	Expected Proportion	Observed Frequency
Bachelor	7	9.6813471	0.09585492	101
Master	56	42.6075949	0.59067357	
Doctorate	38	31.6606218	0.31347150	Expected Frequency
				101
				Expected Proportion
				1.0
Cumulative Proportions				
	Observed	Expected	| O - E |	Dmax
Bachelor	0.069	0.096	0.027	0.064
Master	0.623	0.687	0.064	
Doctorate	1	1	0	
Critical Values of Dmax for n = 101				
Level of Significance (non-directional)				
0.05	0.01			
0.1353	0.1622			

Both tests indicate that the sample data are not statistically different from the known data regarding gender and highest degree earned. These comparisons between

gender and education indicate that the data collected is similar to the data overall population. This comparison also substantiates the validity and trustworthiness of the data in terms of its relation to the entire sample.

Factor Analysis

To test the hypotheses outlined in Chapter Two, multiple linear regression analysis will be used. Prior to conducting the regression analysis, the underlying structure of the constructs was examined to ensure that the measures used had both internal consistency and external discrimination. To do so, a factor analysis was conducted using SAS to determine the number of factors, make refinements and further examine the dimensionality of the data. As is typical in such research, a Scree plot examination and the eigenvalues greater than one rule was used to determine the number of factors as suggested by the Kaiser rule (Rummel, 1970).

The factor analysis was conducted in two phases. First, all twenty Likert-type scale items related to the testing of the hypotheses were subjected to a factor analysis. The underlying test was to determine if the variables created to measure individual phenomena would load together and distinctly from variables associated with other constructs. If the structure (focus) of the data is verified, four factors should emerge corresponding to "intention to turnover," "job satisfaction," "social interaction," and "trust." Any purification (such as elimination of items) of the scales needed from this analysis would be done and then additional factor analyses conducted until the structure is verified and "clean."

Second, the variables in each purified individual construct were then subjected to an individual factor analysis to ensure that the construct is unidimensional (measuring only one factor such as job satisfaction) and that all variables are loading at a high level. Loadings above .3 are considered acceptable based on the work of Nunnally (Nunnally, 1970).

Once each item was verified as measuring a consistent and distinct phenomenon, a summation of the items associated with each factor was created to obtain an individual scale score for each respondent. Summates were created by summing the responses for a specific factor such as job satisfaction. These summates will then be used as input to the regression analyses.

Factor Analysis of Likert Perceptual Items

The Scree plot for the perceived employee loyalty theory scale revealed four eigenvalues exceeding one. Table 15 reveals the first six eigenvalues, explaining 100% of the variance. The concept of retaining only components with an Eigenvalue above 1 is commonly based on the Cattell (1966) Scree plot and the Kaiser (1960) rule. Catell recommended that only components above the point of inflection on a plot of the eigenvalues ordered by diminishing size be retained. Kaiser (1960) recommends retaining components that have eigenvalues equal to or greater than 1.

Table 15. Eigenvalues of the Reduced Correlation Matrix

	Eigenvalue	Difference	Proportion	Cumulative
1	7.93827772	6.31489092	0.5976	0.5976
2	1.62338681	0.15654298	0.1222	0.7198
3	1.46684383	0.36083017	0.1104	0.8302
4	1.10601366	0.31557362	0.0833	0.9134
5	0.79044003	0.42393988	0.0595	0.9729
6	0.36650016	0.08499163	0.0276	1.0005

Based on these factor extractions, there appears to be four meaningful factors, explaining 91% of the variance. This provided support for the four factors that were predetermined and conceptualized.

Factor Loading of Scale Items

To examine the dimensionality of the Employee Loyalty construct, the data were subjected to factor analysis, using an oblique (Promax) rotation, so as to maximize the interpretation of item loading by allowing factors to correlate. This method is often used to establish the unidimensionality of each construct, especially when factors are hypothesized to correlate with other factors of constructs. Unexpectedly, an initial analysis revealed five, instead of the expected four factors (see Table 16). This was caused by three items in the social interaction scale loading separately, instead of together with the other items expected to define the construct. Further analysis of the items revealed that the wording of three of these items related to social interaction limited the responses to reflect only perceptions experienced in an online environment and not perceptions experienced in a face-to-face environment as well. Because of these unexpected wording issues, the decision was made to drop these three items.

As previously described, only scale items with factor loadings of .33 or greater were retained (see Table 16), because an item with less than .33 is only sharing approximately 10% ($.33^2$) of its variance with the associated factor. Based on this common decision rule, one of the items related to job satisfaction was dropped. Based on the reduced number of scale items (n=16), the factor analysis was again conducted (see Table 17).

Table 16. Initial Rotated Factor Pattern with All Items (Standardized Regression Coefficients)

Rotated Factor Pattern (Standardized Regression Coefficients)					
	Factor				
Item	1	2	3	4	5
10	-0.14324	-0.05972	-0.14358	0.09226	0.57174
11	0.06047	0.04158	0.21226	0.00355	0.73726
12	0.14697	0.02296	0.12556	-0.08143	0.70641
13	-0.13543	0.02971	0.15406	-0.01901	-0.00200
14	-0.06352	-0.12639	0.17680	-0.11312	0.33194
15	-0.15413	0.17747	-0.18559	0.01068	0.52089
16	0.10310	0.12370	0.04602	0.73605	-0.04704
17	-0.01166	-0.18001	-0.00448	0.83797	0.07195
18	0.00915	0.01452	-0.07104	0.77449	-0.01070
19	0.06916	0.20610	0.67820	-0.05085	-0.04078
20	-0.16718	0.02573	0.81625	0.05414	-0.05020
21	-0.08689	-0.14981	0.70447	-0.01027	0.07132
22	-0.12782	0.65901	0.12091	0.03968	0.04972
23	0.06676	0.93847	-0.06939	-0.03333	-0.00100
24	-0.11294	0.79795	-0.02350	0.01806	0.07369
25	-0.11015	0.72898	0.03453	0.01171	-0.09486
26	0.89555	-0.03901	-0.12471	-0.07840	-0.01523
27	0.91572	0.01361	-0.07383	0.03322	0.00717
28	0.85438	-0.11280	0.05506	0.09524	-0.04394
29	0.77923	-0.09415	-0.11337	0.09065	0.02128

Table 17. Final Rotated Factor Pattern with Items Removed
(Standardized Regression Coefficients)

Rotated Factor Pattern (Standardized Regression Coefficients)				
	Factor			
Item	1	2	3	4
10	-0.06979	-0.03117	0.15767	0.54747
11	-0.01486	0.00748	-0.05346	0.77185
12	0.11225	0.00308	-0.12159	0.68785
14	-0.10526	-0.13080	-0.16974	0.34815
15	-0.07530	0.21352	0.08334	0.40314
16	0.07796	0.10209	0.71945	-0.01308
17	-0.02216	-0.18494	0.84063	0.04948
18	0.03668	0.01145	0.77575	-0.04096
22	-0.17923	0.63315	-0.00560	0.04013
23	0.09790	0.92628	-0.02240	-0.03031
24	-0.09058	0.78157	0.01489	0.10453
25	-0.13678	0.71704	0.00120	-0.12344
26	0.96340	-0.01018	-0.06228	-0.04873
27	0.96094	0.02644	0.03132	0.00778
28	0.84327	-0.11533	0.05666	-0.02540
29	0.82365	-0.08685	0.11084	0.02514

Factor 1: Intent to Turnover

Factor 1 contained 4 items that concentrated around the theme of intent to turnover; as a result, this factor was named intent to turnover. Items that typified this factor included "I am planning to look for a new job" or "I am thinking about leaving this organization." Factor loadings on this item ranged from .77 to .91 (Table 16). The range of the loadings changed slightly after the selected items were removed to be .82 to .96 (Table 17). This provided evidence that the variances for the items related to intent to turnover were contributed by the factor of intent to turnover.

In addition, a factor analysis was run on only the items that contributed to Factor 1 to examine the factor's unidimensionality (Table 18). The factor analysis resulted in all items related to intent to turnover loading on one factor only confirming the undimensionality of the factor called "intent to turnover."

Table 18. Factor Analysis on Items 26-29

Initial Factor Method: Principal Factors	
Factor Pattern	
Item	Factor 1
q26	0.93735
q27	0.96297
q28	0.94646
q29	0.93640

Factor 2: Trust

Factor 2 consisted of four items. Typical items related to this factor included "I believe that my organization is fair" or "I trust that my organization has my best interests at heart". Factor loadings on this item ranged from .65 to .93 (Table 16). The range of the loadings changed slightly after the identified items were removed to be .71 to .92 (Table 17). This suggests that this factor contributed unique information to the construct of perceived trust.

In addition, a factor analysis was conducted on only the items that contributed to Factor 2 in order to examine the factor's unidimensionality (Table 19). The factor analysis resulted in all items related to trust loading on one factor only confirming the undimensionality of the factor called "trust."

Table 19. Factor Analysis on Trust Items 22-25

Initial Factor Method: Principal Factors	
Factor Pattern	
Item	Factor 1
q22	0.78383
q23	0.85014
q24	0.85014
q25	0.77310

Factor 3: Social Interaction

Factor 3 contained three items that concentrated around the theme of social interaction; as a result, this factor was named social interaction. Examples of this factor included "How does it feel when you go into the office; do you feel like you are missing out on information" or "How does it feel when you go into the office; do you feel like your opportunity for advancement is negatively affected as in out of sight, out of mind". Factor loadings on this item ranged from .67 to .83 (Factors 3 and 4 shown in Table 16). The range of the loadings on the three items remaining changed slightly and resulted in a loading on only one factor after the three items specific to online environments were removed to be .71 to .84 (Table 17). It should be noted that the summates for social interaction initially split across factors 3 and 4 in Table 16. The items were re-inspected and items 19 – 21 were determined to be specifically targeted to the online group. As previously stated the three items were removed and the factor analysis was rerun resulting in the loading shown in Table 17. This provided evidence of unique contribution of Factor 3 to the perceived social interaction construct.

In addition, a factor analysis was conducted on the items that contributed to Factor 3 to examine the factor's unidimensionality (Table 20). The factor analysis resulted in the items related to social interaction loading on one factor only confirming the undimensionality of the factor called "social interaction."

Table 20. Factor Analysis on Social Interaction Items 16-18

Initial Factor Method: Principal Factors	
Factor Pattern	
Item	Factor 1
q16	0.69798
q17	0.86803
q18	0.79662

Factor 4: Job Satisfaction

Factor 4 originally contained 6 items that concentrated around the theme of job satisfaction; as a result, this factor was named job satisfaction. Items that typified this factor included "Generally speaking, I am very satisfied with this job", or "I feel a great sense of personal satisfaction when I do this job well." Factor loadings on this item ranged from .67 to .83 (Table 16). The range of the loadings on the items remaining changed slightly to be .71 to .84 (Table 17). This provided evidence that the variances for the items related to job satisfaction were contributed by the factor of job satisfaction.

In addition, a factor analysis was run on only the items that contributed to Factor 4 to examine the factor's unidimensionality (Table 21). The factor analysis resulted in all items related to job satisfaction loading on one factor only confirming the undimensionality of the factor called "job satisfaction."

Table 21. Factor Analysis on Job Satisfaction Items 10-12, 14, and 15

Initial Factor Method: Principal Factors	
Factor Pattern	
Item	Factor 1
q10	0.51650
q11	0.77879
q12	0.75688
q14	0.33873
q15	0.59900

The factor analysis conducted on individual items related to each specific factor resulted in items loading on only one factor for each group of items. The factor analysis validates the unidimensionality of each factor and supports the conceptualization of the variables as dictated under the theory in Chapter Two. As a result, summates were

created for each subscale. Then, summates were used to create a correlation matrix (Table 22), and then summates were again used as input in the regression analyses described below. The correlation matrices were also determined for each of the groups separately (Table 23 and Table 24). Cronbach's Alpha was then calculated to determine the reliability of each scale.

Finally, before completing the regression analyses for testing the hypotheses, t-tests were conducted between each group on each summated variable in the study, to ascertain if a difference exists between the means of each group.

Table 22. Correlation Matrix of All Responses

Pearson Correlation Coefficients, N = 103				
Prob > |r| under H0: Rho=0				
	Intent to Turnover	Job Satisfaction	Social Interaction	Trust
Intent to Turnover	1.00000			
Intent to Turnover				
Job Satisfaction	-0.40033	1.00000		
Job Satisfaction	<.0001			
Social Interaction	0.47715	-0.28760	1.00000	
Social Interaction	<.0001	0.00320		
Trust	-0.62246	0.35276	-0.45041	1.00000
Trust	<.0001	0.00030	<.000	

Table 23. Correlation Matrix of Responses from Face-to-Face Faculty

Pearson Correlation Coefficients, N = 55				
Prob > |r| under H0: Rho=0				
	Intent to Turnover	Job Satisfaction	Social Interaction	Trust
Intent to Turnover	1.00000			
Intent to Turnover				
Job Satisfaction	-0.48196	1.00000		
Job Satisfaction	0.00020			
Social Interaction	0.49216	-0.36202	1.00000	
Social Interaction	0.00010	0.00660		
Trust	-0.61027	0.33142	-0.47088	1.00000
Trust	<.0001	0.01340	0.00100	

Table 24. Correlation Matrix of Responses from Online Faculty

Pearson Correlation Coefficients, N = 48				
Prob > |r| under H0: Rho=0				
	Intent to Turnover	Job Satisfaction	Social Interaction	Trust
Intent to Turnover	1.00000			
Intent to Turnover				
Job Satisfaction	-0.25030	1.00000		
Job Satisfaction	0.08620			
Social Interaction	0.45570	-0.18745	1.00000	
Social Interaction	0.00110	0.20200		
Trust	-0.65033	0.36460	-0.39325	1.00000
Trust	<.0001	0.01080	0.00500	

As a final determination of the stability and reliability of each summate, Cronbach's Alpha was calculated for all items of a specific factor. As can be seen in

Tables 26, 27, 28, and 29, the Cronbach's Alphas for each of the standardized variables for all items were all well-above .6, the cutoff point suggested by Nunnally (1970).

Table 25. Cronbach's Alpha for Job Satisfaction Items

Cronbach Coefficient Alpha for Job Satisfaction Items					
	Variables	Alpha			
	Raw	0.678688			
	Standardized	0.734956			
Cronbach Coefficient Alpha with Deleted Variable					
	Raw Variables		Standardized Variable		
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha	Label
q10	0.408722	0.640161	0.433614	0.712655	q10
q11	0.625121	0.572831	0.656837	0.625060	q11
q12	0.564288	0.591194	0.609403	0.644569	q12
q14	0.284435	0.741661	0.293065	0.762513	q14
q15	0.484525	0.608877	0.513430	0.682551	q15

Table 26. Cronbach's Alpha for Social Interaction Items

Cronbach Coefficient Alpha for Social Interaction Items					
	Variables	Alpha			
	Raw	0.847431			
	Standardized	0.849116			
Cronbach Coefficient Alpha with Deleted Variable					
	Raw Variables		Standardized Variable		
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha	Label
q16	0.638221	0.857534	0.641521	0.860375	q16
q17	0.806632	0.698770	0.802534	0.706142	q17
q18	0.718776	0.791094	0.714704	0.792352	q18

Table 27. Cronbach's Alpha for Trust Items

Cronbach Coefficient Alpha for Trust Items					
	Variables	Alpha			
	Raw	0.884299			
	Standardized	0.885674			
Cronbach Coefficient Alpha with Deleted Variable					
	Raw Variables		Standardized Variable		
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha	Label
q22	0.737180	0.856102	0.739308	0.857271	q22
q23	0.793375	0.835134	0.791152	0.837315	q23
q24	0.746465	0.853031	0.747086	0.854311	q24
q25	0.722978	0.861256	0.723668	0.863185	q25

Table 28. Cronbach's Alpha for Intent to Turnover Items

Cronbach Coefficient Alpha for Intent to Turnover Items					
	Variables	Alpha			
	Raw	0.972726			
	Standardized	0.972761			
Cronbach Coefficient Alpha with Deleted Variable					
	Raw Variables		Standardized Variable		
Deleted Variable	Correlation with Total	Alpha	Correlation with Total	Alpha	Label
q26	0.920184	0.967015	0.920233	0.967038	q26
q27	0.948390	0.959051	0.948664	0.959065	q27
q28	0.933440	0.963277	0.933181	0.963420	q28
q29	0.922578	0.966394	0.922391	0.966437	q29

In addition a t-test was conducted on all responses to determine if there was a significant difference between the means of each variable for each group (Table 29). The analysis shows that, while a statistically significant difference exists between groups in regard to intention to turnover and job satisfaction, no difference in means is detected with social interaction and trust.

Table 29. T-test of All Responses with Variable for Type Included

The TTEST Procedure on All Responses With Type Variable Included								
Statistics								
Variable	Type	N	Mean	Std Dev	DF	t Value	Pr > |t|	Std Err
Intent to Turnover	Face-to-Face (1)	55	3.3500	2.2062				0.2975
Intent to Turnover	Online (2)	48	4.8594	2.2396				0.3233
Intent to Turnover	Diff (1-2)		-1.5090	2.2218	101	-3.4400	0.0009	0.4389
Job Satisfaction	Face-to-Face (1)	55	7.8655	0.5889				0.0794
Job Satisfaction	Online (2)	48	7.5792	0.7360				0.1062
Job Satisfaction	Diff (1-2)		0.2863	0.6614	101	2.1900	0.0307	0.1306
Social Interaction	Face-to-Face (1)	55	5.0000	2.0154				0.2718
Social Interaction	Online (2)	48	5.3542	1.5595				0.2251
Social Interaction	Diff (1-2)		-0.3540	1.8175	101	-0.9900	0.3262	0.3590
Trust	Face-to-Face (1)	55	4.8818	1.7009				0.2294
Trust	Online (2)	48	4.5156	1.3333				0.1924
Trust	Diff (1-2)		0.3662	1.5408	101	1.2000	0.2317	0.3043

Having confirmed the appropriateness of the sample, eliminated concerns related to potential non-response bias, determined the conformance of the underlying structure of

the data to theory, established the unidimensionality of each scale, and verified the reliability of each scale, regression analysis was then conducted to explore the relationships projected in each hypothesis.

Regression Analysis

A linear regression analysis was performed on the data received from both the face-to-face faculty respondents and the online faculty respondents. Three separate analyses were conducted. First, a regression analysis was conducted on all respondents with a dummy variable (Telecommuters) included that blocked (differentiated between) face-to-face and online instructors. The significance of the coefficient of this dummy variable will verify that a statistically significant difference exists between the two groups. In addition, this analysis will confirm the overriding theory brought from the literature that the independent variables do relate, as conceptualized, to the dependent variable, intention to turnover.

Then, two separate regression analyses were conducted on each group independently. The purpose of this analysis was to explore the dynamics of the relationships inside of each group, thereby to ascertain relationships among the variables inside of each group.

The multiple index of determination, R^2, and F values for each regression were determined for each analysis to determine how much of the variance in the dependent variable are explained by the independent variables.

Table 30 exhibits the results of the regression on all respondents, with a dummy variable (telecommuters) included to indicate membership in either the online group or

the face-to-face group. All responses from members of the face-to-face group were coded with a zero and all responses from members of the online group were coded with a one (Table 30). Including this variable in the regression analysis resulted in a t-value for telecommuters of 3.04, $p < .003$ (Table 30), indicating that the groups are indeed different, as suggested by correlation matrices and t-tests. The results of this analysis supports the suggestion that employee loyalty levels are related to the work environment; and more specifically that loyalty levels for faculty working in an online work environment differ from loyalty levels of faculty that work in a face-to-face or traditional work environment. As can be seen in Table 30 the t-value of the independent (dummy) variable Telecommuters is over 3 which indicates that a significant difference exists in the perceptions of the online faculty regarding intent to turnover.

Table 30. Regression Analysis of All Respondents

Regression Analysis of All Responses Dependent Variable = Intent to Turnover							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	1	8.92824	2.26276	3.95	0.0001	4.43785	13.41862
Telecommuters	1	1.02988	0.33836	3.04	0.0030	0.35842	1.70134
Job Satisfaction	1	-0.45757	0.27008	-1.69	0.0934	-0.99353	0.07839
Social Interaction	1	0.27431	0.10325	2.66	0.0092	0.06941	0.47921
Trust	1	-0.68638	0.12442	-5.52	<.0001	-0.9333	-0.4394
R^2			0.5085				
F-Statistic			25.3445				

As expected, social interaction and trust are significantly related to intention to turnover. As social interaction increases and trust decreases, intention to turnover rises. Surprisingly, however, the t-value for job satisfaction suggests an insignificant relationship to intention to turnover. This result is at odds with theory and common

sense, as job satisfaction should certainly relate to intention to turnover and has in most every study. As a result of this surprising result, especially given correlation coefficients examined earlier, further examination was conducted in the regressions on each group, presented below, specifically the face-to-face group (Table 31) and the online group (Table 32).

The regression analysis for the face-to-face group provided an interesting depiction.

Table 31. Regression Analysis of Face-to-Face Faculty Responses

Regression Analysis of Face-to-Face Faculty Dependent Variable = Intent to Turnover							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	1	12.97881	3.45294	3.76	0.0004	6.04674	19.91087
Job Satisfaction	1	-1.01101	0.41098	-2.46	0.0173	-1.83608	-0.18594
Social Interaction	1	0.20988	0.12842	1.63	0.1083	-0.04793	0.4677
Trust	1	-0.55843	0.15034	-3.71	0.0005	-0.86025	-0.2566
R^2					0.4872		
F-Statistic					16.1494		

These results suggest that job satisfaction is significantly related to intention to turnover, as was expected from theory, while social interaction has fallen out of significance for this group. Such stark differences were not expected, even though correlation coefficients and t-tests might have hinted at them.

The picture becomes even more interesting with the regression analysis on the online group.

Table 32. Regression Analysis of Online Faculty Responses

Regression Analysis of Online Faculty Dependent Variable = Intent to Turnover							
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	95% Confidence Limits	
Intercept	1	7.33451	2.90321	2.53	0.0152	1.48348	13.18554
Job Satisfaction	1	-0.00972	0.35905	-0.03	0.9785	-0.73334	0.7139
Social Interaction	1	0.33944	0.17161	1.98	0.0542	-0.00642	0.68529
Trust	1	-0.93429	0.21175	-4.41	<.0001	-1.36104	-0.5075
R^2				0.4702			
F-Statistic				13.0187			

Again surprisingly, job satisfaction falls completely out of significance with the group, while social interaction is not technically significant and trust has an extremely large effect.

The three regression analyses present an interesting canvas of insights discussed in the final chapter.

Chapter Summary

The analyses discussed in this chapter were conducted to establish the appropriateness of the data collected, the dimensionality of the underlying structure of the data, and coefficients, both correlations and beta coefficients from regression, needed to explore the hypotheses developed in Chapter Two. In Chapter Five, these analyses will be used to examine the testing of these hypotheses, as well as to discuss the insights that arose from the study.

CHAPTER FIVE

RESULTS, CONTRIBUTIONS, LIMITATIONS, AND SUGGESTIONS FOR FUTURE RESEARCH

> "Certainly there are no shortages of challenging opportunities today. In these extraordinary times, the challenges seem to be increasing and through our responses, we have the potential to profoundly change the world in which we live and work" (Kouzes and Posner, 2002, p. xvii)

Chapter Overview

This chapter summarizes and concludes the research conducted in this dissertation. The overriding purpose of this study is to determine if employees working in an online or telecommuting work environment will demonstrate a lower loyalty level than employees working in a traditional face-to-face work environment. As a preface to this purpose, characteristics of the work environment that were perceived as affecting loyalty were selected. These characteristics were identified via the literature search to be job satisfaction, social interaction, and trust. In addition, intent to turnover was identified as a surrogate measurement of employee loyalty.

To operationalize this process, the subjects of the study were identified and separated into two distinct groups: those working in a traditional face-to-face work environment and those working in an online telecommuting environment. Both groups were administered an identical survey instrument.

In Chapter One several questions were posed with regard to work design. The principal question: Does working in a telecommuting or online work environment have a causal impact, directly or indirectly, on an employee's loyalty to an organization? If so,

what effects does the change of environment have on the employee's loyalty? The answers to these questions were determined and revealed through an extensive review of the literature and a statistical analysis of collected data.

As a component of addressing these questions, this effort includes the identification and definition of the work environment characteristics that should be included in the study of work environment impact on employee loyalty. The study described in this dissertation tested the three proposed constructs of the work environment that impact employee loyalty and their proposed linkages. These work environment characteristics were identified via a thorough review of the literature in Chapter Two. Job satisfaction, social interaction, and trust were presented as the factors effecting employee loyalty associated with the work environment in Chapter Two.

The next step of this research effort was the construction of a methodology to collect pertinent data and determine if this theory and proposed constructs are supported through empirical analysis. For the purposes of this research, a measurement instrument was developed to assess the impact of the work environment characteristics on employee loyalty as represented by intent to turnover. In addition, this instrument served to collect data regarding each of the work environment characteristics, which were identified to contribute to employee loyalty. The interaction and linkage between each of the characteristics were examined through data analysis. The measurement instrument was adopted and derived from the existing research that spanned each of the identified work environment characteristics and the surrogate (intent to turnover) for employee loyalty.

Data were gathered via the survey instrument (Appendix A) that was delivered to full time faculty members at a community college substantially invested into online

learning and submitted for analysis on the internet. The survey was distributed in soft format and online to 222 full time faculty members at the institution. One hundred and three usable responses were gathered for this study resulting in a response rate of 46.4%.

The reliability and validity of these individual items was established in each of these research efforts. The validity of this study's measurement instrument implementation of these items was re-confirmed both qualitatively and quantitatively. A thorough review of the literature in conjunction with the scale development served to establish content validity. Measurement items that evaluated an employee's job satisfaction, social interaction, trust, and loyalty as represented by intent to turnover were used to establish criterion validity. The survey instrument was reviewed by experts and determined to support content validity. Aspects of each item were reviewed for appropriateness and applicability. The reliability and trustworthiness of the data were confirmed via inspection, tests for non-response bias, and comparisons to known population parameters. The dimensionality of the scales used in the study was confirmed via factor analysis, and a purification process was used to ensure that measures were unidimensional. The analysis of the data was documented in Chapter Four. Multiple linear regression analysis was used to examine the hypotheses proposed by theory. The analysis of the data is presented here for discussion.

Results

In this section, each of the hypotheses constructed in Chapter Two are reviewed in conjunction with the statistical analysis documented in Chapter Four. The review revisits each of the constructs in relationship to the appropriate hypothesis.

Hypothesis Regarding Intent to Turnover

H_0: Employee's attitudes and perceptions regarding his/her loyalty, as conceptualized being composed of job satisfaction, social interaction and trust, will affect an employee's intent to turnover, and that impact will be different based on telecommuting versus traditional work environments. } $Hypothesis_0$

The hypotheses in Chapter Two identified intent to turnover as a surrogate for employee loyalty. The concept that intent to turnover (employee loyalty) is dependent in part on the work environment as represented by the three characteristics identified in this study was presented in Chapter Two as well. The predictions regarding intent to turnover as related to the work environment are supported by this study as initially hypothesized. In addition, this study also supports the linkages between the characteristics of the work environment and employee loyalty as represented by intent to turnover.

Regression analysis was conducted on all responses and then on both groups as they were outlined in Chapter Three. The first group was defined as employees who work in a traditional work environment (the "face-to-face" group). The second group was defined as employees who work in an online or telecommuting work environment (the "online" group). Both groups exhibited relatively low to moderate scores ($\mu_{\text{Face-to-Face}} = 3.35$, $\sigma_{\text{Face-to-Face}} = 2.206157$, $\mu_{\text{Online}} = 4.86$, $\sigma_{\text{Online}} = 2.239578$) on a possible 9-point scale on items regarding intent to turnover. A t-test examining the difference in these means yielded a t-value of 2.22, significant at less than .01, confirming, as hypothesized, that the groups are indeed different. Furthermore, a regression analysis using membership in each group as a dummy variable confirmed the difference (t=3.04). As anticipated, the face-to-face group indicated a lower level of intent to turnover, as

workers in a traditional work environment were expected to feel a greater sense of attachment to the organization through a more established physical presence. The regression analysis of all the responses clearly confirmed the fact that the face-to-face group reflected a lower intent to turnover than the online group. These results support the theory and the hypotheses in Chapter Two regarding the structure of the work environment on employee loyalty.

The responses of both groups indicate that changes in the work environment can potentially have a significant effect on employee loyalty. The groups differed on the degree to which each of the factors of the work environment influenced loyalty levels. While the statistical tests point to differences in intention to turnover, the surrogate for loyalty, the job environment factors that cause these differences are quite different and interesting, even unexpected, to which the discussion now turns.

Hypothesis Regarding Job Satisfaction

H_1: The work environment of telecommuters versus traditional workers can affect employee attitudes and perceptions of job satisfaction. } Hypothesis$_1$

The first of the three characteristics of the work environment is job satisfaction. This construct examines the employee's perception of his/her satisfaction with the work environment. The work environment is perceived as an amorphous existence in which the employee can thrive or diminish. The employee's concept of the work environment and interaction with the work environment result in his/her sense of job satisfaction. The predictions regarding job satisfaction and its effect on employee loyalty are supported by

this study as initially hypothesized. In addition, this study does support the linkages between job satisfaction and employee loyalty as represented by intent to turnover as shown in Chapter Four.

For the most part both groups had high scores ($\mu_{\text{Face-to-Face}} = 7.87$, $\sigma_{\text{Face-to-Face}} = .58885268$, $\mu_{\text{Online}} = 7.58$, $\sigma_{\text{Online}} = .73599212$) on 9-point scale items regarding job satisfaction. T-tests suggest that the groups' perceptions of job satisfaction are different ($p=.03$), with the face-to-face group predictably exhibiting the statistically higher scores.

Nevertheless, regression analysis uncovered a much more complex dynamic underlying job satisfaction. Surprisingly, in a regression of all respondents, job satisfaction fell slightly out of statistical significance. When separate regressions were conducted on each group, job satisfaction had virtually no impact whatever on the intent to turnover for the online group ($t=-.03$, $p=.978$), while the effect was large ($t=-2.46$, $p=.017$) for the face-to-face group. While commonalities exist in attributes of the work environment that form the basis of this perception, some of the attributes of the work environment that employees relate to job satisfaction are endemic to their specific work environment, which differs in this study based, at least in part, on location. Both groups are aware of their respective work environments and embrace a perception of the respective job satisfaction based on their own personal perspective of the work environment. So, while both groups are relatively satisfied, even though one more than the other, the impact of satisfaction on intention to turnover is profoundly different.

As work environment characteristics affect employees, job satisfaction provides an employee's perspective of how the work environment affects him/her. The characteristic, job satisfaction contributes to an employee's sense of loyalty but only for

the face-to-face group. Because both groups are drawn from the same organization, a reasonable assumption is that other organizational characteristics such as pay, benefits, opportunities for advancement, etc. will affect job satisfaction of employees in both groups identically. This infers that the perception of job satisfaction should be relatively consistent across the population of subjects, further suggesting that the noted differences are due to the respective work environments.

Hypothesis Regarding Social Interaction

H_2: The work environment of telecommuters versus traditional workers can affect employee attitudes and perceptions of social interaction. } Hypothesis$_2$

The characteristic of the work environment identified as social interaction, deals with an employee's ability to interact with coworkers, management, and customers (Salancik and Pfeffer, 1978; Chen and Kroeger, 2001; Wright, 1995; Kunda, 2006). This interaction contributes to the nature of the relationship that the employee experiences with the organization. The hypothesis H_2 in Chapter Two identified this work environment characteristic as a significant contributor to employee loyalty. The predictions regarding social interaction and its effect on employee loyalty are not supported by this study as initially hypothesized. Furthermore, this study does not support the linkage between the social interaction and employee loyalty as represented by intent to turnover.

Both groups had moderate scores ($\mu_{\text{Face-to-Face}} = 5$, $\sigma_{\text{Face-to-Face}} = 2.015373$, $\mu_{\text{Online}} = 5.35$, $\sigma_{\text{Online}} = 1.559545$) on items regarding social interaction. Notably, there is not a

significant level of difference between the level of social interaction associated with the work environment experienced by the online group than the face-to-face group (t-.99, p=.326). Even though a face-to-face work environment provides a more substantial opportunity to interact with coworkers, management, and customers, no difference was found between the online and face-to-face group.

Again, an interesting portrayal emerges from the examination of correlation coefficients and regression analyses of the relationship between social interaction and intention to turnover. Concerning the analysis of all respondents, social interaction is related positively and statistically to intention to turnover, as hypothesized by theory. A Pearson product moment correlation of .477 ($p<.001$) between social interaction and intent to turnover suggests that more social interactions are associated with more intention to turnover. In a regression analysis of all respondents, social interaction emerges a significant predictor of intention to turnover ($t=2.66$, $p<.01$), as was suggested by the correlation coefficient.

A surprising result emerges inside of each group. Correlation coefficients suggest a positive relationship across both face-to-face ($r=.491$, $p<.001$) and online ($r=.446$, $p<.001$) groups. Yet, in the regression analysis of both groups, social interaction falls out of significance. For the face-to-face group, the t-value of the beta coefficient was 1.28 ($p>.10$), and for the online group, the corresponding value was 1.98 ($p=.052$). Repeated analyses confirmed these results, and the reason for the regression results remains a mystery. A potential explanation may relate to the social interaction that emerges from internet and other electronic communication versus physical, face-to-face conversations. At this point, however, that is merely speculation.

Hypothesis Regarding Trust

H_3: The work environment of telecommuters versus traditional workers can affect employee attitudes and perceptions of trust. } Hypothesis$_3$

The final hypothesis dealt with the trust. This characteristic of the work environment deals with the employee's perception of the state of his/her relationship with the organization (Coutu, 1998; Chapdelaine 1998; Matzler and Renzl, 2006). The predictions about this work environment characteristic were supported more substantially than initially anticipated. In addition, this study supports the linkages between employee trust and employee loyalty as represented by intent to turnover.

For the most part both the face-to-face and online groups had relatively moderate scores ($\mu_{\text{Face-to-Face}} = 4.88$, $\sigma_{\text{Face-to-Face}} = 1.700936$, $\mu_{\text{Online}} = 4.52$, $\sigma_{\text{Online}} = 1.333295$) on items regarding trust. The perceptions of trust with regard to the work environment are not statistically different ($t=1.2$, $p=.232$) across the groups.

The impact of trust on intention to turnover is consistent and significant across groups and respondents. The correlation coefficient of -.622 ($p<.001$) is very large. Similarly, the beta coefficient in the regression analysis for all respondents is large ($t=-5.52$, $p<.001$). Each group exhibits similar effects in isolation. The face-to-face group shows a correlation of -.610 ($p<.001$) and a beta coefficient with a t-value of -.371 ($p<.001$). The online group exhibits a correlation of -.650 ($p<.001$) and a beta coefficient with a t-value of -4.41 ($p<.001$). All effects are large and in the direction expected.

These results indicate that trust is reflective of the employee's relation to the work environment and more importantly supports the notion that the change in this work

environment characteristic is contributory to employee loyalty. Because the subjects are from a single organization, the perception of trust should be relatively consistent across the population of subjects. Because no differences emerge across groups, trust, as a work environment component, remains stable in its influence, even though the online group does not have the day-to-day physical connection to the organization.

Summary of Evaluation of Hypothesis

As in the past, current economic circumstances are inducing organizations to reconsider the potential for incorporation of teleworking or online work environments. This research and the resulting findings have major implications in the organizational and managerial decision to embrace and include teleworking or online work in the organizational work environment. While the logistics of engaging in these types of work environments have been refined, the critical "work design" of the non-tangible components of the work environment has not been addressed. This work design effort is necessary to optimize the potential for maintaining levels of employee job satisfaction, social interaction, and trust with the anticipated result of insuring high levels of employee loyalty.

Employee loyalty is extremely important in that it is instrumental in securing and cementing the employee's relationship with the organization. This research has supported the concept that components of the work environment, job satisfaction, social interaction and trust, contribute to employee loyalty.

This expectation of consistency can be described as a concept that members of both groups, for the most part, perceive the work environment characteristics that

contribute to loyalty to be similar. A consistent perspective of the work environment and the identified characteristics supports the concept that changes in the work environment can result in changes in employee loyalty levels. The results of this study support the theory that employee loyalty is in part based on the employee's perception of his/her work environment. More importantly, this research supports the theory that employees working in an online telecommuting work environment may experience lower levels of loyalty as represented by a higher indication of intent to turnover than employees working in a traditional face-to-face work environment. In addressing these theories, this research also supports the concept that job satisfaction, social interaction, and trust are components of the work environment that contribute to an employee's sense of loyalty.

This study presents a profound perspective for organizations that are engaging or considering engaging in moving employees from a traditional work environment to an online or telecommuting work environment. Results confirm that employees in face-to-face work environments perceive their organizations very differently and in a more complex way than imagined.

The online groups, as anticipated, had a significantly lower level of loyalty to the organization than did the workers in a traditional work environment. This lower loyalty was also reflected in lower levels of job satisfaction. Surprisingly, however, social interaction and trust, while still important to the formation of loyalty, were not significantly different across the work environments.

In addition, the underlying dynamics reflected how satisfaction, trust and social interaction affect loyalty, through regression analysis, proved to be far more complex than initially expected. Job satisfaction does not impact perceptions of loyalty in the

online group, while it remains critical to the face-to-face group. Furthermore, social interactions do not differentially affect loyalty across groups, which suggest that the online group has found surrogates, perhaps online communication, as a mechanism for bonding with other people in the organization. Finally, trust, although essential for loyalty, does not differentially affect the group, suggesting that the organization's culture has somehow managed to provide a uniform perception of trust, independent of work environment.

As previously stated, the logistics of an employee's involvement in an online or telecommuting work environment are well established; the aspects of work design for this work environment have not been perfected. For leaders, this means that they must invest a considerable effort in establishing a work environment that will promote high job satisfaction, encourage social interaction, and engender trust. The result of this effort will be sustainable employee loyalty. If employees are left to work in an online or telecommuting work environment without appropriate consideration given to work design, then it is significantly probable that they will experience lower levels of employee loyalty. If appropriate work design efforts are initiated, then organizations should reap the rewards of higher levels of employee loyalty.

The observations reported in this document support the theories outlined in this research regarding the impact of the work environment on employee loyalty. Organizations cannot simply place employees in an online or telecommuting work environment without serious consideration being given to the design of the work environment. Employees cannot be left to the isolation of an online or telecommuting work environment. The organization must make efforts to compensate for the lack of the

constructs found in a traditional work environment. This is an investment and consideration that the organization cannot afford to bypass, as the results of lower loyalty are too costly.

The insights into the relationship between the work environment and employee loyalty that are presented and supported by the data from this study are critical to the continued expansion by organizations into the online or telecommuting work environment. The results of this study are intended to represent an intermediate stage in the development of a comprehensive theory of work design for telecommuting employees. Table 33 summarizes the results of the hypothesis testing.

Table 33. Conclusions to Hypotheses

Hypothesis		Conclusion
H_0	Job satisfaction, social interaction and trust, will affect an employee's intent to turnover, and that impact will be different based on telecommuting versus traditional work environments.	Accept
H1	The Work Environment of telecommuters versus traditional workers can affect employee attitudes and perceptions of Job Satisfaction.	Accept
H2	The Work Environment of telecommuters versus traditional workers can affect employee attitudes and perceptions of Social Interaction.	Reject
H3	The Work Environment of telecommuters versus traditional workers can affect employee attitudes and perceptions of Trust.	Reject

The Contributions of this Study

The findings of this study provide a new awareness of the subtle nuances of the work environment's effect on employee loyalty. This research identifies several implications for the practitioner and for continued theoretical development in the area of work design with a focus on loyalty of online and telecommuting employees. The resulting contributions of this research are addressed below in regard to theory and practice.

Contributions to the Development of Theory

This research provides some interesting insights, both in support and against, current theoretical underpinnings from the literature. As organization researchers probe these more common telecommuting environments, this study provides some interesting support and challenges to the current status of theory.

As theory would dictate, indeed profound differences were found in face-to-face and online work environments. This was especially true in regard to loyalty and job satisfaction. Beyond the surface level differences, however, a much more complex and interesting dynamic was found below the surface, suggesting that employees' perceptions are very different across the two groups.

As theory would dictate, telecommuting employees feel less loyalty than do traditional employees, and this insight, while expected, is still disturbing in that employers need to retain good employees, and an online work environment presents very real challenges toward bolstering loyalty. The study confirms those concerns and the need for attention in the literature.

Also, a theory would dictate online employees experience less satisfaction than do traditional environment employees. Surprisingly, however, and still somewhat a mystery, job satisfaction, while critical to employees in a face-to-face environment, is not significant in predicting loyalty among online workers. This insight, if confirmed in other studies and not a mere measurement artifact or anomaly, should provide theorists with an interesting challenge, since satisfaction, while highly correlated to loyalty, falls out of significance in a regression analysis.

Social interaction, which would be expected to impact loyalty differentially across the face-to-face and online groups, did not in this study. Apparently, workers have expanded the notion of social interaction to include non-physical interactions. At least as operationalized in this research, social interaction, while important, is not distinct across the two groups. Researchers and theorists may want to use this study as a springboard for reconceptualizing the definitions and operationalization of the social interaction construct, as online employees in this study have apparently found a mechanism for capturing social interaction without physical contact. Importantly, social interaction is still critical to the formation of loyalty, but the lack of difference either perception or impact on loyalty across the two groups suggests that the underlying mechanisms of social interaction are more complex than currently configured in theory.

Trust, as dictated by theory, is ubiquitous in the formation of loyalty, and the work environment, at least in this organization and this study, does neither impact the employees' perceptions of trust nor impact the formation of loyalty differentially.

This research is only the first step in identifying the impact of the characteristics of the work environment on employee loyalty. Theorists have examined employee loyalty from a variety of perspectives and at a variety of levels. This study is notably unique in that its conclusions are based on data developed from two distinct groups working at the same organization. The results drawn from statistical analysis of the data may be viewed as the formation of a basis of theoretical framework for evaluating employee loyalty. In addition, the results are contributory to a deeper understanding of how work environments affect employee loyalty.

The measurement instrument employed for the purposes of this study was developed to gather data pertinent to the effect of the work environment on employee loyalty. This study added to the development and comprehension of a measurement instrument for the purposes of measuring the relationship between a work environment and employee loyalty. The measurement instrument that resulted from this research provides a notable initial and additive contribution to the continuing development of an instrument for the study of employee loyalty.

Contributions to the Practice

The impact of employee loyalty, or lack thereof, on the organization requires serious consideration, as employee turnover and training costs are tremendous. This study reveals several aspects of the effect of the work environment on employee loyalty. The first of these aspects is the cost considerations when stationing employees in a telecommuting or online work environment are dichotomous. While telecommuting has been shown to save an organization and employees the investment each makes in a formal or traditional work environment, the trade-off inherently costs the organization and the individual. The cost to the organization is realized in the loss of loyalty, dedication, and retention of expertise. The cost to the individual is a sense of disassociation and distance with the organization. The implications of this study are obvious in the cost of dissolution of the relationship or intent to turnover. Turnover of employees is extremely costly to the organization and as shown by this study can be the result of the impact of the work environment on employee loyalty.

Another of the aspects is that employee loyalty is a fluid and constantly changing measure of the employee's tie to the organization. Similarly to the manner in which high employee loyalty results in a long term relationship between the employee and the organization, low employee loyalty often results in a dissolution of the relationship between the employee and the organization.

A third insight that the results of this research provides is the understanding that an employee's perception of the identified work environment characteristics is based on the work environment. This is shown in the subtle differences noted in the data regarding employee's perception of social interaction and job satisfaction. The loyalty of employees working in a face-to-face work environment is shaped in part, by how these characteristics are perceived by employees in relationship to the work environment. In an online or telecommuting work environment, these characteristics are perceived differently in a subtle fashion. Due to the work environment, the impact of work environment constructs that are viable and stronger in a face-to-face work environment become negligible or non-existent in an online or telecommuting work environment, as the work environment is unable to support them.

Management bears the responsibility of implementing work design techniques that contribute to higher employee loyalty. This study indicates that management's work design effort should be tailored to align with the structure of the work environment. It should be noted that one reason for the fluidity of loyalty is that employees are constantly monitoring and evaluating the work environment and, as a result, are responding to the design of the work environment and constantly altering their perception of loyalty. Employees' monitoring of the work environment starts when they join the organization

and continues until they separate from the organization. The employee's perceptions are modified on a moment-to-moment basis. When it comes to work environments, "one size does not fit all". In light of these results, organizations should re-evaluate their perspectives to work design, especially with regard to the online or telecommuting work environment.

The results of this study indicate that the identified characteristics of the work environment contribute to an employee's loyalty as represented by intent to turnover. In addition, the results of this study make salient the concept that loyalty levels of workers engaged in an online or telecommuting work environment are notably lower than the loyalty levels of employees working in a face-to-face work environment. In an effort to design an online or telecommuting work environment that encourages higher levels of employee loyalty, management should consider the following:

1. Job satisfaction is typically a goal of every organization, but this study suggests that the impact of job satisfaction on intention to turnover is much more complex than originally thought. While job satisfaction is virtuous in and of itself, the dynamic through which it affects loyalty is possibly not as straightforward in an online environment as common sense might dictate.
2. Social interaction, while important to loyalty, may also be complex in telecommuting work environments, and workers may be finding innovative ways to find social interaction that does not require face-to-face interaction. With the advent of inexpensive teleconferencing equipment, technological surrogates for social interaction may become easier in the future. In this study, apparently, workers have already amassed some mechanisms to fill a

social interaction need, and those mechanisms are sufficient to both provide a similar level of fulfillment, as well as to suffice in not deleteriously impacting loyalty, relative to employees in traditional work environments. For managers, social interaction represents a new frontier in which traditional definitions may not be applicable. This study suggests that creative employees will fill the need for social interaction through mechanisms available to them.

3. The results of this study suggest that trust can be maintained independent of work environment, probably through consistent policies and with a culture founded on integrity. Work environment does not need to affect the foundation and experience of trust. Management must assure that there is not a difference between what they say and what they do. It is important to note that in the case of an online or telecommuting employee, omissions of the truth could be as damaging to the employee's trust level as an out-right deception. Above all, consistency is paramount to maintaining employee trust.
4. As telecommuting becomes increasingly important, managers might want to monitor perceptions, and the instrument created for this research could be a good starting point. Even informal managerial evaluations of an employee's state of job satisfaction and intent to turnover could help mitigate dissatisfaction and increase loyalty. Most importantly, managers should remain vigilant for any changes in attitude from an employee, as this dynamic telecommuting environment is constantly changing.

5. Finally, equity should be a priority, as expressed in trust, for telecommuting employees. They must perceive that they are more to the organization than a remotely located asset.

At an organizational level, this study suggests that following might be implemented:

1. Make sure that all employees have a sense of being part of the organizational family. This could be accomplished in part by periodic targeted communications that address each employee's contribution and importance to the organization.
2. Include input from online or telecommuting employees in organizational decisions. This could be accomplished in part by soliciting feedback from these employees on a variety of issues.
3. Be open to the concept that employees working in distinctly different work environments may require different types of encouragement, interaction, and feedback from the organization. The work environment for employees working in an online or telecommuting work environment should be constructed with a unique set of work environment characteristics. Remember, "One size does not fit all."
4. Seek opportunities to tie the online or telecommuting employees to the organization. This may include establishing an online or telecommuting rotation among interested employees. This would contribute to the periodical physical re-integration of employees into the organization.

When implementing any recommendations, it is prudent that a practitioner exercise a careful and patient implementation so that employees do not perceive the

changes to the work environment as threatening but rather as beneficial. If these recommendations are implemented in a careless and unplanned fashion, the result will usually be a decrease in job satisfaction, generation of suspicion regarding the nature of social interaction, lower levels of trust, and most importantly a lowering of employee loyalty. Positive results typically take an extended period to implement and accomplish. Negative results are nearly instantaneous with regard to impact on employee perceptions.

With regard to the measurement instrument:, it can potentially be of use to the practitioner as a work design diagnostic tool. It is the opinion of this researcher that the instrument should be expanded to include a more granular assessment of employee perceptions of work environment characteristics and the linkages between them. More in-depth information about the work environment characteristics and their inter-relationships may serve as an indicator to practitioners regarding the level to which perceptions of the work environment may influence employee loyalty. This information would contribute to the practitioner becoming more fully aware of the work design effort necessary to assure an environment that at the very least does not negatively affect employee loyalty. If appropriately applied, it could potentially result in the fostering employee loyalty. This refined instrument could be engaged periodically to gather information and an assessment of employee loyalty.

Practitioners could use the information gathered by this assessment to evaluate their work design efforts and adjust them appropriately. Practitioners should consider including employees in the development of adjustments to the work environment to secure their "buy-in" to the effort. This would result in the employees being open and committed to the alterations in their work environment and strengthen the trust

component of the relationship between the employees and the organization. In addition, this joint effort could potentially result in generating higher loyalty levels.

Limitations of the Research

This study, like all others, has some inherent limitations that may bias or affect the inferences made based on the results. The limitations of this study and their associated implications are discussed below:

1. Some limitations of this effort are due to the collection of data via a perception-based survey instrument. Subjects in this study may have developed misperceptions regarding their individual work environment. The response provided could have been tainted by misconceptions regarding the work environment or the organization's intent. The respondent could be expressing a perception that has been internalized to the point that it becomes a self-fulfilling prophecy and influences the response. The respondent may also have misinterpreted the intent of the specific item or misreported his/her perception of the item.
2. Measures of job satisfaction, social interaction, trust, and intent to turnover were solicited and obtained in this study using single instrument self-reporting techniques. The potential exists that data obtained in this fashion from respondents could possibly be biased. This potential bias could be reduced or eliminated if the data collected via the use of these measures were obtained using additional accepted traditional methodologies.

3. The subjects in this study are all working in an academic environment. This could inject some preconceptions and expectations regarding the work environment. The work environment from which subjects in both sample groups were selected presents the opportunity for exposure to higher-level concepts. This in itself could imply a bias that could be addressed by repeating of the experiment with employees who are not employed by an academic organization.
4. The data used in this study were collected from a single organization. While this methodology has the virtue of holding all organizational-wide influences constant, it has the disadvantage of inhibiting the generalizability of the results. Applying these results to another work environment without confirmation of more cross-sectional studies is potentially perilous.

Suggestions for Future Research

A number of additional research opportunities were identified in the limitations section of this chapter. These additional research opportunities could be additive to this effort or address areas not touched by this research. The opportunities for further research are expansive, as the area of work design for online or telecommuting work environments has been previously subjected to limited examination. The theoretical dependency of work environment characteristics on the work environment has not been examined or addressed. For example, can the nature and makeup of job satisfaction be considered to remain constant between work environments as dispersedly different as a traditional work environment and an online work environment? To be more precise, how

can work environments be designed that engender greater levels of employee loyalty? Employee turnover is one of the most costly impacts to organizations. Determining solutions that limit intent to turnover are critically important to both the practitioner and academic researchers.

The measurement instrument holds potential as the initial step in additional studies of work design with emphasis on creating work environments that foster and ensure employee loyalty. This research instrument needs to be more expanded and enhanced to include the examination of the nature of work environment characteristics within a specific work environment. For example, is the source and nature of job satisfaction the same in an online or telecommuting work environment as it is in a traditional face-to-face work environment? With further refinements and modifications, this instrument could be used as a generally accepted measurement instrument for evaluating employee loyalty as it relates to the work environment. The basis of this research instrument is a sound review of the fundamental literature and accepted theoretical methodologies. This review was used to evaluate and substantiate the identified characteristics of the work environment and the associated impact they have on employee loyalty. To assure the viability of this research instrument, it should be used and applied in additional research; especially in industries other than academia. Prior to this expansion of use of the survey instrument, it would be prudent to assure its refinement via an evaluation utilizing discriminate analysis and other statistical techniques to confirm its viability in evaluating employee loyalty as it relates to the work environment in other industries and with varying data sample sets.

Chapter Summary

This chapter serves to draw this study to a close. It includes an overview and a summary of the results of this research. It includes an in-depth discussion of the contributions of this study to theoretical development and applicable insights for use for general practitioners. The limitations of the study are identified and generally examined in this chapter with the intent to suggest potential solutions for the limitations that could be incorporated into future research. Potential future research efforts are discussed to provide insights into them.

This research is considered an initial step in developing a greater understanding of the impact that the work environment has on employee loyalty and the development of work design efforts to address this impact. The results are significant to theories and real life applications regarding work design and the implications for employee loyalty. This research confirms the need for new and innovative efforts with regard to work design, particularly in the online or telecommuting work environment. This research potentially engenders significant excitement and interest in the area of work design and the effect of the work environment on employee loyalty. The results of this study generate significant implications for management and organizations. Further research has the potential for providing managers with a more substantial understanding of how the work environment they create can affect their employees' perceptions of the value of the relationship they are engaged in with the organization. This valuable relationship is defined as loyalty.

REFERENCES

Adams, T. F. (1977). A Survey of the Seyfert Galaxies Based on Large-Scale Image-Tube Plates. *The Astrophysical Journal Supplement Series*, Vol 33, 19.

Armstrong-Stassen, M. (1998). Alternative work arrangements: Meeting the challenges. *Canadian Psychology*, 39: 1-2, 108-123.

Armstrong, J. S. and Overton, T S. (1977). Estimating non-response bias in mail surveys. *Journal of Marketing Research.* Vol.14 (3), 396.

Atkinson, J. W. and Raynor, J. O. (1974). Motivation and Achievement. Washington, D.C.: Winston.

Bailyn, L. (1988). Freeing work from the constraints of location and time. *New Technology, Work, and Employment*, 3,143-165.

Baruch, Y. (2000). Teleworking: Benefits and pitfalls as perceived by professionals and managers, *New Technology, Work and Employment*, 15, 34-49.

Baruch, Y. and Nicholson, N. (1997). Home sweet work: Requirements for effective home working, *Journal of General Management*, 23, 15-30.

Becker, T. E. (1992). Foci and bases of commitment: Are they distinctions worth making?. *Academy of Management Journal,* Mar Vol 35(1) 232-244.

Belanger, F. (1999). Communication patterns in distributed work groups: A network analysis. *IEEE Transactions on Professional Communication*, 42, 21-275.

Birchall, D. and Lyons, L. (1995). Creating Tomorrow's Organization: Unlocking the Benefits of Future Work. London, England: Pitman Publishing.

Boroff, K. and Lewin, D. (1997). Loyalty, Voice, and Intent to Exit a Union Firm: A Conceptual and Empirical Analysis. *Industrial and Labor Relations Review*, Vol. 51, No. 1, (Oct., 1997), 50-63.

Borzaga, C. and Tortia, E. (2006). Worker Motivations, Job Satisfaction, and Loyalty in Public and Nonprofit Social Services. *Nonprofit and Voluntary Sector Quarterly*, Vol. 35, No. 2, 225-248

Carbone, J. H. (1997). Loyalty: subversive doctrine? *The Academy of Management Executive*, 11(3): 80-87.

Cascio, W. (1973). Value Orientation, Organizational Rewards and Job Satisfaction. Unpublished Dissertation, University of Rochester.

Catell, R. B. (1966). The Scree Test for the Number of Factors. *Multivariate Behavioral Research*, 1, 629-637.

Caudron, S. (1992) Working at home pays off. *Personnel Journal*, 71, 40-49.

Chapdelaine, G. R. (1998). Lessons from yesterday on building employee loyalty today. *Nation's Restaurant News*, 34-35.

Chen, C, (1995). New trends in reward allocation preferences: A Sino-U.S. comparison. *Academy of Management Journal*, 38, 408-428.

Chen, S. and Kroeger, J. W. (2001) Technological Adoption to Combat Burnout. *ISECON Proceedings*, 2001, 18, 15b.

Churchill, G A. (1979). A paradigm for developing better measures of marketing concepts. *Journal of Marketing Research,* 16, 1: 64-73

Clancy, J. J. (1999). Is loyalty really dead? (includes related article on the US labor market) (Employer loyalty). *Across the Board*, 36(6): 14-20.

Cotton, J. I. and Tuttle, J. M. (1986). Employee Turnover: A Meta-Analysis and Review with Implications for Research. *Academy of Management Review*, January, 55-70.

Cox, E. P. (1980). The Optimal Number of Response Alternative for a Scale: A Review. *Journal of Marketing Research*, November, 17, 4: 407-422.

Coutu, D. L. (1998). Trust in Virtual Teams. *Harvard Business Review*, 76.n3 (May-June 1998): 20(2).

Daniels, K., Brough, P. Guppy, A., Peters-Bean, K. M., and Weatherstone, L. (1997). A note on the modifications to Warr's measures of affective well being at work. *Journal of Occupational and Organizational Psychology*, 70, 129-38.

Daniels, K. (1999). Home based teleworking and mobile teleworking: a study of job characteristics, well-being, and negative carry-over. *Work Science Report Series*, 13/14, 1535-6 Tokyo: Institute of Science of Labour.

Daniels, K., Lamond, D. A., and Standen, P. (2000). Managing Telework. Perspectives from Human Resource Management and Work Psychology. London, England: Business Press.

Dennocenzo, D. A. (2006). How to Lead From a Distance. Dallas, Texas: The Walk the Talk Company.

Di Martino, V.D., and Wirth, L. (1990). Working at a distance. *The Worklife Report*, 9, 9-9.

Dunnette, M. D. and Hough, L. M. (1990). Handbook of Industrial and Organizational Psychology. Palo Alto, CA: Consulting Psychologists Press, 172-173.

Eisenhardt, K.M. (1989). Agency theory: an assessment and review. *Academy of Management Review*, 14, 57-74.

Ensign, P.C. (1998). Interdependence, coordination, and structure in complex organizations: implications for organization design. *The Mid-Atlantic Journal of Business*, 34, 5-22.

Eskildsen, J. K. and Nussler, M. L. (2000). The Managerial Drivers of Employee Satisfaction and Loyalty. *Total Quality Management*, Vol 11, Numbers 4.6, 1 July 2000, 581-588.

Finegold, D., Mohrman, S., Spreitzer, G. (2002). Age effects on the predictors of technical worker's commitment and willingness to turnover. *Journal of Organizational Behavior*, 23(5), 655-674.

Fink, A. (2003). The Survey Handbook; 2nd edition. Thousands Oaks, California: Sage Publications.

Fisher, K. and Fisher, M. D. (2001). The Distance Manager: A Hands-On Guide to Managing Off-Site Employees and Virtual Teams. New York, New York: McGraw-Hill.

Frolick, M., Wilkes, R., and Urwiler, R. (1993). Telecommuting as a workplace alternative: An identification of significant factors in American firms' determination of work-at-home policies. *Journal of Strategic Information Systems*, 2, 3, 206-222.

Furger, R. (1989). The growth of the home office. *Infoworld*, 45-49.

Gates, B., Myhrvold, N., and Rinearson, P. (1995). The Road Ahead. New York, New York: Penguin Books.

Gerbing, D.W., and Anderson, J. C. (1988). An Updated Paradigm for Scale Development Incorporating Unidimensionality and its Assessment. *Journal of Marketing Research, 25*, 2: 186-192.

Gilbreth, F. B. (1973). The Primer of Scientific Management. New York: Easton.

Gilbreth, L. M. (1914). Psychology of Management: the Function of Mind in Determining, Teaching, and Installing Methods of Least Waste. New York: Sturgis and Walton Company.

Gordon, G.E. and Kelly, M.M. (1986). *Teleworking: How to make it Work for You and Your Company*. Englewood Cliffs, NJ: Prentice Hall.

Gussow, D. (2006). Teleworking: Businesses have more reasons to embrace what used to be called telecommuting. June 5, *St. Petersburg Times,* St. Petersburg, FL.

Gray, M., Hodson, N., and Gordon G. (1993). Teleworking Explained. New York: John Wiley & Sons.

Greco, J. (1998). America's changing workforce. (includes related article on recruiting challenges in the US) *Journal of Business Strategy*, 19(2): 43-47.

Hackman, J. R. and Oldham, G. R. (1980). Work Redesign. Philippines: Addison-Wesley Publishing Company, Inc.

Hajdin, M. (2005). Employee Loyalty: An Examination. *Journal of Business Ethics*, 59: 259-280.

Hamilton, C.A. (1987). Telecommuting. *Personnel Journal*, 66, (April), 91-101.

Harrington, S. I. and Ruppel, C. P. (1999). Telecommuting: A test of trust, competing values, and relative advantage, *IEEE Transactions on Professional Communication*, 42, 223-239.

Hartman, R. I. and Stoner, C.R. (1991). An investigation of selected variables affecting telecommuting productivity and satisfaction. *Journal of Business and Psychology*, 6, 207-225.

Hartman, R. I., Stoner, C. R., and Arora, R. (1992). Developing successful organizational telecommuting arrangements: Workers perceptions and managerial prescriptions. *SAM Advanced Management Journal,* Summer, 35-42.

Hellriegel, D., Slocum, J. W., and Woodman, R. W. (1986). Organizational Behavior, 5th ed. New York: West Publishing.

Herzberg, F.I., Mausner, B., and Snyderman, B. (1959). The Motivation to Work. New York: Wiley.

Herzberg, F.I. (1982). *The* Managerial Choice: To Be Efficient and To Be Human. Homewood, Illinois: Dow Jones-Irwin.

Herzberg, F.I. (1987). One more time: How do you motivate employees?, *Harvard Business Review*, Sep/Oct87, Vol 65 Issue 5, 109-120.

Hill, E. J., Miller, B. C., Weiner, S. P., and Colihan, J. (1998). Influences on the virtual office on aspects of work and work/life balance, *Personnel Psychology*, 51, 667-683.

Hill, E. J., Ferris, M., and Martinson, V. (2003). Does it matter where you work? A comparison of how three work venues (traditional office, virtual office, and home office) influence aspects of work and personal/family life. *Journal of Vocational Behavior*, Vol 63, Issue 2, October 2003, 220-241.

Hirschman, A.O. (1970). Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States. Cambridge, Ma.: Harvard Press.

Howard, C. (1998). Be true to your crew. (Corporate employee loyalty) *Canadian Business*, 71(18) 127-128.

Huws, U., Korte, W.B., and Robinson, S. (1990). Telework: Towards the Elusive Office. New York, New York: John Wiley & Sons.

Ivancevich, J., Olekalns, M., and Matteson, M. (1997). Organizational Behavior and Management. Sydney: McGraw-Hill.

Kahn, M. B, and Tung, L. L. (1997). Telecommuting: Comparing Singapore to Southern California. *Human Systems Management*, 01672533, 1997, Vol 16, Issue 2.

Kaiser, H. F. (1960). The Application of Electronic Computers to Factor Analysis. *Educational and Psychological Measurement*, 20, 141-151.

Karsh, B., Booske, B.C., and Sainfort, F. (2005). Job and organizational determinants of nursing home employee commitment, job satisfaction, and intent to turnover. *Ergonomics*, Vol 48, No. 10, 15.

Kelloway, K. E., Gottlieb B. H., and Barham, L. (1999). The Source, Nature, and Direction of Work and Family Conflict: A Longitudinal Investigation. *Journal of Occupational Health Psychology*, 4, 4, 337-346.

Koenig, B. E., Henderson, D. K., and Mokhtarian, P. I. (1996). The travel and emissions impact of telecommuting for the State of California Telecommuting Pilot Project, *Transportation Research Record* C, 4, 13-32.

Kouzes, J. M., Posner, B. Z. (2002). The Leadership Challenge. San Francisco, CA.: Jossey-Bass.

Kunda, G. (2006). Engineering Culture: Control and Commitment in a High-tech Corporation. Philadelphia, PA: Temple University Press.

Labbs, J. (1998). They want more support – inside and outside of work. (includes related article on employee loyalty) (work and family issues facing employees), *Workforce, in press.*

Lamarche, S. (n.d.). Employee Loyalty: an effective solution for labour shortage. Retrieved August 8, 2008, from www.adp.ca/upload/Employee_Retention_CQCD.pdf.

Lambert, D. M., and Harrington, T. C. (1990). Measuring non-response bias in customer service mail survey. *Journal of Business Logistics,* Oak Brook, 11(2), 5-26.

Lee, Soo-Young and Whitford, Andrew B. (2007). Exit, Voice, Loyalty**,** and Pay Evidence from the Public Workforce. *Journal of Public Administration Research and Theory*, doi:10.1093/jopart/mum029

Lipnack, J. and Stamps, J. (1997). Virtual Teams: Reaching Across Space, Time, and Organizations with Technology. New York, New York: John Wiley and Sons, Inc.

Locke, E. A. (1976). The Nature and Causes of Job Satisfaction. *Handbook of Industrial and Organizational Psychology*, 1297-1343.

Locke, E. A. (1984). Job Satisfaction. *Social Psychology and Organizational Behavior,* 93-117.

Lubinski, D. and Benbow, C. P. (2004). An Opportunity for Empiricism. *PsycCRITIQUES*.

Manning, R.A. (1985). Control Data Corporation: Alternative work site programs. *Office Workstations in the Home*, 38-50, National Academy Press, Washington, D.C.

Matzler, K. and Renzl, B. (2006). The Relationship between Interpersonal Trust, Employee Satisfaction, and Employee Loyalty**.** *Total Quality Management & Business Excellence*, Vol 17, No. 10. (2006), 1261-1271.

McCarthy, M. E. (2001). Exploring the impact of Blurred Boundaries in Teleworkers. Unpublished Dissertation, Dalhousie University, Halifax, Nova Scotia.

McClelland, D. C. (1961). The Achieving Society. New York: Van Nostrand Reinhold.

McClelland, D. C. (1975). Power: The Inner Experience. New York: Irvington.

McCusker. D. and Wolfman, I. (1998). Loyalty in the eyes of employers and employees. *Workforce, in press*.

Megginson, L.C., Mosley, D. C. and Pietri, P. H. (1992). Management: Concepts and Applications. New York, New York: HarperCollins Publishers, Inc.

Meyer, J. P., & Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review*, 1, 61-89.

Milgrom, P. and Roberts, J. (1992). Economics, Organization, and Management. Englewood Cliffs, NJ: Prentice Hall.

Mintzberg, H. (1979). The Structuring of Organizations. Englewood Cliffs, NJ: Prentice Hall.

Mokhtarian, P.L. and Salomon, I. (1996). Modeling the choice of teleworking: Identifying the choice set and estimating binary choice models for technology-based alternatives. *Environment and Planning*, 28, 1877-994.

Montgomery, D. (1989). The Fall of the House of Labor: The Workplace, the State, and American Labor Activism, 1865-1925. Cambridge, MA: Cambridge University Press.

Mueller, C. W., Wallace, J. E. and Price J. L. (1992). Employee commitment: Resolving some issues. *Work and Occupations*, 19: 211-236.

Niles, J.M. (1994). Making Telecommuting Happen: A Guide for Telemanagers and Telecommuters. New York, New York: Van Nostrand Reinhold.

Nunnally, J. C. (1970). Introduction to Psychological Measurement. New York: McGraw-Hill.

Pedhazur, E. J., & Schmelkin, L.P. (1991). Measurement, Design, and Analysis: an Integrated Approach. Hillsdale, N.J.: Lawrence Erlbaum Associates.

Philippe, T.W. (2002). Organizational Hypocrisy: An Employee Perspective on Consistency. Unpublished Dissertation, University of South Florida, Tampa, Florida.

Price, J. L. and Mueller, C. W. (1981). Professional Turnover, *The Case of Nurses*.

Ramsower, R.M. (1985). Telecommuting*:* The Organizational and Behavioral Affects of Working at Home. Ann Arbor: University of Michigan Research Press.

Rapert, M.I. and Wren, B.M. (1998). Reconsidering Organizational Structure: A Dual Perspective of Frameworks and Processes. *Journal of Managerial Issues*, 10, 287-3023.

Reichheld, F. F. (1996). The Loyalty Effect: The Hidden Force Behind Growth, Profits, and Lasting Value. Boston, Ma.: Harvard Business School Press.

Reichheld, F. F. (2001). Loyalty Rules: How Today's Leaders Build Lasting Relationships. Boston, Ma.: Harvard Business School Press.

Reinsch, N.L. (1997). Relationships between telecommuting workers and their managers: An exploratory study. *The Journal of Business Communication*, 34, 343-369.

Riggio, R. E., Murphy, S. E., and Pirozzolo, F. J. (2002). Multiple Intelligences and Leadership. Mahwah, NJ: Lawrence Erlbaum, 119-138.

Robbins, S. P. and Judge, T. A. (2007). Organizational Behavior. Upper Saddle, New Jersey: Pearson Prentice Hall.

Rummel, F.J. (1970). An Introduction to Research Procedures in Education. New York: Harper & Row.

Sachau, D. A. (2007). Resurrecting the Motivation-Hygiene Theory: Herzberg and the Positive Psychology Movement. *Human Resource Development Review* 2007; 6; 377.

Sagie, A., Birati, A., Tziner, A. (2002). Assessing the cost of behavioral and psychological withdrawal: A new model and an empirical illustration. *Applied Psychology: An International Review*, 51(1), 67-89.

Salancik, G.R. and Pfeffer, J. (1978). A social information processing approach to job attitudes and task design. *Administrative Science Quarterly*, 23, 224-253.

Satmetrix Systems (2002). Measuring Employee Loyalty. A Satmetrix Systems White Paper.

Scott, C.R. and Timmeran, C.E. (1999). Communication technology use and multiple workplace identifications among organizational teleworkers with varied degrees of virtuality. *IEEE Transactions on Professional Communications*, 42, 240-260.

Sparrow, P.R. (1996). Transitions in the psychological contract in U.K. banking. *Human Resource Management Journal*, 6, 75-92.

Stahl, M. J. (1986). Managerial and Technical Motivation: Assessing Needs for Achievement, Power, and Affiliation. New York: Praeger.

Standen, P., Daniels, K., and Lamond, D. (1999). The home as a workplace: Work-family interaction and psychological well-being in telework. *Journal of Occupational Health Psychology*, 4, 4, 368-381.

Stroh, L. K., Brett, J. M., Reilly, A. H. (1996). Family Structure, Glass Ceiling, and Traditional Explanations for the Differential Rate of Turnover of Female and Male Managers. *Journal of Vocational Behavior*, Vol 49, Issue 1, August 1996, 99-118.

Taylor, F. W. (1912). Discussion of the Present State of the Art of Industrial Management, *American Society of Mechanical Engineers*, *Transactions* Vol 34, 1194-201.

Taylor, F. W. (1967). The Principles of Scientific Management. New York, New York: W.W. Norton & Company, Inc.

Teo, T.S.H., Lim, V.K.G., and Har, W.S. (1999). Assessing attitudes towards teleworking among information technology (IT) personnel. *Singapore Management Review*, 21, 33-49.

Tiffany, S. (1997). Corporate commitment boosts morale, *Candy Industry,* 162(5): 26-27.

Tolbert, P. S. and Simons, T. (1994). The impact of working at home on career outcomes of professional employees. *(Working Paper 94-04)*. Ithaca, NY: Cornell University, Center for Advanced Human Resource Studies.

Townsend, A.M., DeMarie, S. and Hendrickson, A.R. (1998). Virtual Teams: Technology and the workplace of the future. *Academy of Management Executive*, 12, August, 17-29.

Turner, J. H., Brown, G. (2004). An Improved Job Dimension Scale to Measure Job Satisfaction in Sales Reps, *Journal of the Academy of Business and Economics*, March, 2004.

US Department of Transportation (1993). Transportation Implications of Telecommuting, April. Washington, D.C.

Ugboro, I. O. (2006). Organizational Commitment, Job Redesign, Employee Empowerment and Intent to Quit Among Survivors of Restructuring and Downsizing. *Journal of Behavioral and Applied Management*, May 2006.

Van Ommeren, J.N. (1998). Telework in Europe, in *Teleworking Environments: Proceedings of the Third International Workshop on Telework*. Turku, Finland.

Vroom, V. H. (1964). Work and Motivation. New York: John Wiley.

Warr, P. (1990). The measurement of well-being and other aspects of mental health. *The Journal of Occupational Psychology*, 63, 193-210.

Warr, P. (1994). A conceptual framework for the study of work and mental health. *Work and Stress*, 8, 84-97.

Whetten, D.A. (1989). "What constitutes a theoretical contribution?" *Academy of Management Review, 14*(4), 490-495.

Wilkes, R., Frolick, M., and Urwiler, R. (1994). Critical issues in developing successful telework programs. *Journal of Systems Management*, Sept., 31-34.

Williams, L. J. and Hazer, J. T. (1986). Antecedents and consequences of satisfaction and commitment in turnover models: A re-analysis using latent variable structural equations models. *Journal of Applied Psychology*, 71, 219-231.

Wright, C. (1995). The Management of Labor: A History of Australian Employers. Melbourne, Australia: Oxford University Press.

Zedeck, S. (1992). Work, Families, and Organizations. San Francisco, CA: Jossey Bass.

Zikmund, W. G. (2003). Business Research Methods. Fort Worth, Texas: The Dryden Press, Harcourt Brace College Publishers.

APPENDICES

Appendix A: Survey Instrument

Section One

1. I am a full time faculty member. Yes ___ No ___
2. Are you presently teaching at least 75% of the time in a telework or online environment? Yes ___ No ___ If you answer no proceed to question number 5.

The following questions 3-4 were derived from a dissertation by Mary McCarthy on role conflict experienced by telecommuting workers. (McCarthy, 2001)

3. How long has it been since you started teaching in a teleworking or online environment? ___ Months ___ Years

   (Original question: "How long has it been since you started the home work (telework) option?") The wording of this question is changed to reflect the academic work environment.

4. How much time on average are you working in a teleworking or online teaching environment?

   a. Time per week? ____ %
   b. Days per week? ____

   (Original question: "How much time, on average are you working in your home per week as part of the home work or telework option? Number of days per week ___.") The wording of this question is changed to reflect the academic work environment.

5. Are you presently teaching at least 75% of the time in a traditional face to face teaching environment? Yes ___ No ___

The following questions 6-7 were derived from a dissertation by Mary McCarthy on role conflict experienced by telecommuting workers. (McCarthy, 2001)

6. How long has it been since you started teaching in a traditional face-to-face teaching environment? ___ Months ___ Years

   (Original question: "How long has it been since you started the home work (telework) option?") The wording of this question is changed to reflect the academic work environment.

7. How much time on average are you working in a traditional face-to-face teaching environment?

   c. Time per week? ____ %

   d. Days per week? ____

   (Original question: "How much time, on average are you working in your home per week as part of the home work or telework option? Number of days per week ___.") The wording of this question is changed to reflect the academic work environment.

Section Two

Job Satisfaction

Questions 8-14 are directed at determining an employee's job satisfaction level. These questions were derived from Hackman's & Oldham's job satisfaction survey without modification. (Hackman and Oldham, 1980).

8. My opinion of myself goes up when I do this job well.
9. Generally speaking, I am very satisfied with this job.
10. I feel a great sense of personal satisfaction when I do this job well.
11. The work I do on this job is very meaningful to me.
12. I feel bad and unhappy when I discover that I have performed poorly on this job.
13. I feel I should take the credit or the blame for the results of my work on this job.
14. I am generally satisfied with the kind of work I do in this job.

Social Interaction

The following questions 15-19 are from Mary McCarthy's dissertation. (McCarthy, 2001)

15. Do you find yourself missing the regular face-to-face contact you used to have with your coworkers and students?

    (Original question: "Do you find yourself missing the regular contact you used to have with your coworkers?") The wording of this question is changed to reflect the academic work environment.

16. How does it feel when you go into the office?
    e. Do you feel like you are missing out on information?
    f. Do you feel like your opportunity for advancement is negatively affected as in "out of sight, out of mind"?

    (Original question: How does it feel when you go into the office? Specifically do you feel like you are missing out on information? Do you feel like your opportunity for advancement is negatively affected as in "out of sight, out of mind"?) The wording of this question is changed to reflect the academic work environment.

17. How does it feel when you teach in an online classroom? Specifically do you find yourself missing the regular contact you used to have with your students?

    (Original question: "With regard to teleworking: Do you find yourself missing the regular contact you used to have with your coworkers?") The wording of this question is changed to reflect the academic work environment.

18. How has working in a telework or online teaching environment affected your ability to communicate with coworkers?

    (Original question: How has teleworking affected the way of means through which you communicate with others in the office?) The wording of this question is changed to reflect the academic work environment.

19. How has working in a telework or online teaching environment affected your ability to communicate with students?

    (Original question: "How has teleworking affected the way or means through which you communicate with others in the office?") The wording of this question is changed to reflect the academic work environment.

Trust

Questions 20 – 23 are from a dissertation by Tom Philippi on corporate hypocrisy. These questions were used without modification to determine an employee's trust level with regard to the organization. (Philippi, 2002).

20. I trust that my organization has my best interests at heart.

21. There is a difference between what my organization says and what it does.

22. The organization says things that I do not expect to happen.

23. I believe that my organization is fair.

Intent to Turnover

The following questions, 24-27, are used unaltered from a longitudinal study by Kelloway, Gottlieb, and Barham regarding the work and family conflict. (Kelloway, Gottlieb, and Barham, 1999)

24. I am thinking about leaving this organization.

25. I am planning to look for a new job.

26. I intend to ask people about new job opportunities.

27. I don't plan to be with this organization much longer.

Section Three

Demographic Information

Questions 28-30 are used unaltered from Mary McCarthy's dissertation and were designed to collect related demographic information. (McCarthy, 2001)

28. Gender: Male ____ Female ____

29. Which range reflects your current age?

____ 24 to 30 years
____ 31 to 35 years
____ 36 to 40 years
____ 41 to 45 years
____ 46 to 50 years
____ 51 to 60 years
____ 61 and above

30. What is the highest level of education your have completed?

____ Bachelors Degree
____ Post Graduate Study
____ Doctorate Degree
____ Honors Degree
____ Masters Degree

Marital Status

____ Single
____ Married/Living with partner
____ Divorced/Separated
____ Widowed

If you have a partner, what is his/her

Occupation _____

Highest level of education completed

____ Bachelors Degree
____ Post Graduate Study
____ Doctorate Degree
____ Honors Degree
____ Masters Degree

31. What is your employment classification or job title?

_____

32. How long have you been working for the organization/institution?

___ Years

___ Months

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Kenneth N. Pereira obtained a Bachelor of Science in Engineering Information Systems from the University of South Florida. He received his Master of Science, in Engineering Management, from the University of South Florida.

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