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UNIVERSITY OF EDINBURGH  
Business School

# **The Networks of Female Entrepreneurs in Technology-based Firms in Jordan: Structure, Content and Evolution**

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## **Abstract**

Female entrepreneurs establishing new firms in Jordan mostly do not have adequate internal resources to help support the successful emergence and growth of their enterprise. Agreement has emerged among scholars that network ties are an effective source or route through which entrepreneurs are able to reach and obtain the resources necessary to assist their firm through its various stages development.

Understanding more about how Jordanian female entrepreneurs engage in networking in order to establish and grow their firms, might help inform policy intervention as well as inform theory by identifying the model of network development in a field where there is a lack of studies and literature that explores the networking behaviour of female entrepreneurs, particularly in Eastern societies. Thus, this research investigates the development of networks for resource acquisition by exploring the experiences of female entrepreneurs in 14 technology-based firms in Jordan. It explores the structural characteristics and the content of their networks and how they have developed over time to deliver advantage in resource acquisition during the venture formation and early development stages. Rich qualitative data were collected utilising a two-stage, in-depth interview approach.

Evidence is presented as to how changes in aspects of network structure, including diversity, reachability, density, centrality and the presence of strong and weak ties, yield different types of resources available to the entrepreneurs. The network structure of female entrepreneurs at start-up was characterised by business ties established within male-dominated networks. There was evidence of these women building new strong ties and reaching out through a small number of indirect ties. Typically there was a high degree of interconnectedness between different parts of the women's networks, which were characterised by their density. These structural characteristics of the network enabled these women to reach and obtain human capital, financial resources and achieve legitimacy.

As the female entrepreneurs grew their businesses there were changes in the network structure as it became characterised by a higher level of diversity in terms of types of

tie. The prominence of male-dominated network ties continued, but there was a growing presence of weak ties; a decline in the level of network density; and the appearance of centrality, where women started to act as a broker between two other actors in their networks. These changes saw the women benefitting mainly in building network ties, including gaining access to new contacts of different types.

The research revealed that professional business ties and access through these ties play an important role in venture creation and growth. These business ties are used to act as the gateway to resources rather than the personal ties identified in previous research. Further, in support of network-based research suggesting that the entrepreneurs' network ties and their structural characteristics change overtime as the resource needs change, this research provides empirical evidence of the changing content (resources) that these structural characteristics provide through the start-up and early development stages. Therefore, the findings of this exploratory research on female technology entrepreneurs in Jordan contribute to theory development at the intersection of work on network processes, network development and entrepreneurship in Middle Eastern societies. The findings also have a number of implications for policy and practice, which are considered in the conclusions to the thesis.

# Declaration of Originality

I herewith declare that the thesis has been composed entirely by myself and embodies the results of my own work. To the best of my knowledge and belief it contains no material previously published or written by another person(s) except where due reference has been made. The thesis contains no material that has been accepted for the award of another degree at a university or any other educational institution.

Primary results of this research that have been presented in some of the international conferences and workshops include:

**High-Tech small firm conference** (forthcoming), Groningen, June 4<sup>th</sup> and 5<sup>th</sup>, 2015. Developing networks for resource acquisition during the start-up and early-growth stages: exploring the experiences of female technology entrepreneurs in Jordan.

**Rent XXVIII- Research in entrepreneurship and small business**, Luxembourg, November 19<sup>th</sup> to 21<sup>st</sup>, 2014. Female entrepreneurial networks: exploring the activities of Jordanian female technology entrepreneurs.

**ISBE**, Manchester, November, 5<sup>th</sup> and 6<sup>th</sup>, 2014. Networking for venture creation and development: exploring the activities of Jordanian female technology entrepreneurs.

**DTC Pathway Colloquium, University of Stirling**, Stirling, April, 28<sup>th</sup> and 29<sup>th</sup>, 2014. Entrepreneurial process and networking activities of female technology entrepreneurs: The case study of Jordan.

**International Entrepreneurship Workshop, University of Edinburgh Business School**, Edinburgh, April, 8<sup>th</sup> and 9<sup>th</sup>, 2014. Networking for venture creation and development: exploring the activities of Jordanian female technology entrepreneurs.

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Wejdan M Alakaleek

August 2015

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Wejdan Alakaleek



## Abbreviations

<b>CAWTAR</b>	Centre of Arab Women for Training and Research
<b>FYGL and BC</b>	The Forum of Young Global Leaders and Booz and Company
<b>GEM</b>	Global Entrepreneurship Monitor
<b>ICT</b>	Information and Communication Technology
<b>IFC</b>	International Finance Corporation
<b>Intaj</b>	The Information and Communication Technology Association
<b>JDS</b>	Jordanian Department of Statistic
<b>JEDCO</b>	Jordan Enterprise Development Corporation
<b>JFBPW</b>	The Jordan Forum for Business and Professional Women
<b>JNCW</b>	Jordan National Committee for Women.
<b>MENA</b>	Middle East and North African
<b>MHESR</b>	Ministry of Higher Education and Scientific Research (Jordan)
<b>MPIC and UND</b>	Ministry of Planning and International Cooperation (Jordan) and United Nations Development Programme
<b>N2V</b>	National Net Ventures
<b>QRCE</b>	Queen Rania Center for Entrepreneurship
<b>UN</b>	United Nation
<b>UNESCO</b>	The United Nations Educational, Scientific and Cultural Organisation
<b>USAID</b>	The United State Agency for International Development
<b>VTC</b>	Vocational Training Corporation
<b>CEO</b>	Chief Executive Officer
<b>USA</b>	United States of America

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## **Chapter 1: Introduction**

### **1.1 The research background**

The encouragement of women-owned entrepreneurial ventures has become a tool to help address high levels of unemployment and to achieve more economic growth, particularly in areas that add value to society's economic development, such as technology-based sectors (Hampton et al., 2011). Opportunities are greatest where current economic participation by women is low: Jordan is characterised by the low economic involvement of women both as a business owner and employee. Only 5.3% of businesses in Jordan are owned by women (MPIC and UND, 2011).

New business formation is a combination of the entrepreneur's motivation and access to the required resources that enable him/her to exploit a vital opportunity (Aldrich, 1989). Access to different resources in this equation is the key by which the motivated entrepreneur can take advantage of newly discovered opportunities (Aldrich, 1989). Commonly, female entrepreneurial firms in Jordan face many difficulties including limited financial resources, as well as other challenges related to marketing and recruiting good employees (IFC and CAWTAR, 2007). These firms usually do not have adequate internal resources to facilitate more successful emergence and growth, and as a result may face a high probability of failure. Therefore, enabling these entrepreneurs to engage in more successful formation and growth through securing access to resources in the external environment is vital (Steier and Greenwood, 2000; McEvily and Zaheer, 1999).

Network ties have been identified as an effective channel through which the resources entrepreneurs need are transmitted (Dubini and Aldrich, 1991). Abundant resources, from financial and physical resources to information and symbolic supports, are required for the entrepreneurial firm (Kanter, 1984). Throughout the entrepreneurial process, an entrepreneur needs different types of network structure to secure avenues for accessing these different resources (Elfring and Hulsink, 2007). Each structural characteristic of the entrepreneur's network represents a key source of some

entrepreneurial resources (Hoang and Antoncic, 2003). For example, if entrepreneurs need new information, then weak ties are more beneficial than strong connections (Martinez and Aldrich, 2011; Granovetter, 1985).

The network ties provide entrepreneurs with different content (resources): human capital in the form of knowledge and information (Semrau and Werner, 2014; Johannisson, 1998; Coleman 1988); financial capital (Hanlon and Saunders, 2007; Steier and Greenwood, 1999); establishing firm legitimacy (Batjargal, 2010; Moensted 2010); and building other networks (Söderqvist and Chetty, 2013; Semrau and Werner, 2014; Martinez and Aldrich, 2011). As such, network ties provide many resources to the entrepreneur (Jack et al., 2004; Lechner and Dowling, 2003) as they represent a tool for exchanging and creating bridges to other actors, including individuals and firms (Powell, 1990).

Analysing the role of the entrepreneur's network in the process of resource acquisition requires developing insights of how they build their network in a way which helps them to obtain and reach the needed resources (Ozdemir et al., 2014; Martinez and Aldrich, 2011). Researchers argue that this depends on: the firms' developmental stages (Martinez and Aldrich, 2011; Hite and Hesterly, 2001) and the type of the industry or country in which entrepreneurs are running their business (Stam et al., 2014).

The basic argument is that the resources which entrepreneurs need and their acquisition challenges change through the business development process (Hite and Hesterly, 2001). From this perspective, the entrepreneur's network ties need to be developed to correspond to changes in the firm's resource requirements (Sullivan and Ford, 2014; Grave and Salaff 2003; Hite and Hesterly, 2001). Entrepreneurs continually have to maintain their networks ties and try to connect with new ties to gain new resources and sustain their firms' growth (Rivera et al., 2010; Hansen, 1995). Each stage of new firm's development processes are differentiated by performing groups of activities in which the entrepreneur's network ties play vital roles (Martinez and Aldrich, 2011). For example, during the very early stage, strong social ties impact directly on the

individual's initial intention and motivation towards the entrepreneurial activities (Martinez and Aldrich, 2011).

The industry context of entrepreneurial firms may also define the appropriate network structural characteristics that would benefit the entrepreneurs (Stam et al., 2014). For example, the entrepreneur's weak ties are more effective in obtaining new information about new products and technologies, and positively affect the performance of new high-technology firms (Stam et al., 2014). Technology-based entrepreneurial firms, the focus of this research, are known for their high interdependency, uncertainty (Moensted, 2007) and their requirement for different tangible and intangible resources (McGowan et al., 2013). To deal with these firms' nature and to reach these resources, technology entrepreneurs can use help and resources from others through developing network ties (Moensted, 2010) as an effective way to support their business entry and aid successful growth (Elfring and Hulsink, 2003).

Further, the configuration of the entrepreneur's network ties may need to cope with the social, economic and institutional context in which the entrepreneurs operate (Stam et al., 2014). In Jordan, the interest of different bodies- governmental, institutional and social, in entrepreneurial activities is new and in many aspects is still under-developed. This is improving as society witnesses many transformations in socio-economic areas. Jordan's technology sector, for example, has recently witnessed increasing involvement from some government and non-government initiatives focused on developing technology entrepreneurship and working to enable start-ups in different areas. However, Jordanian entrepreneurs and would-be entrepreneurs face different challenges, making their efforts to start or sustain and grow their business difficult. These challenges include the lack of formal entrepreneurship education and availability of financial resources (Stevenson et al., 2010). Additionally, there are some social aspects related to Jordanians' high fear of failure (Stevenson et al., 2010) and families' preference for secure jobs. More effort is needed in Jordan to increase the level of entrepreneurship as well as facilitate communication between different

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players to enable the mobilisation of resources for those who become entrepreneurs, and in particular for female entrepreneurs.

An entrepreneur's network ties, therefore, are vital in obtaining and reaching resources that are required for the emergence and early-growth of firms (Hite and Hesterly, 2001). The configuration of these network ties may develop in a way to cope with the business development stages (Martinez and Aldrich, 2011), industry or country in which the entrepreneur is working (Stam et al., 2014), hence, the research interest in the network development of female entrepreneurs in their early development stages. Thus, the Jordanian context has been selected as an example of a Middle East societies for two main motives:

**First**, Jordan's technology sector has recently witnessed much physical and intellectual development (Majcher-Teleon and Slimene, 2009) generated by a favourable business environment and ecosystem, especially in the ICT sector (Intaj, 2013). This makes the country's technology sector one of the more desirable place to launch technology start-ups, locally and regionally. For example, it attracted 50 percent of the country's new firms (Intaj, 2013) and it is recognised as a haven for the region's entrepreneurs (FYGL and BC, 2011). This suggests that Jordan's technology sector is a good place to find female entrepreneurial firms in the early stages of development.

**Second**, the experiences of female entrepreneurs in the Jordanian context and in the traditionally male-dominated sector are of particular interest given that their entrepreneurship involvement is low. Despite the recent debate about their increasing numbers involved in entrepreneurship particularly in the technology sector, they are still under-represented and in percentage terms their engagement level is considered the lowest globally and regionally (Bearing Point, 2007). Thus, there is less entrepreneurial activity among women in Jordan than in the other countries. Through exploring how they build network ties to obtain and access resources for their firms' start-up and early-growth, this research provides a unique opportunity to understand

those women's entrepreneurship experiences in an area where entrepreneurship involvement is low.

## **1.2 The research objective**

The aim of this study is to explore how the network ties female entrepreneurs in Jordan develop provide advantage in resource acquisition during the early development stages of their technology-based firms. This involves an understanding of the dynamic nature of network ties and an examination of how and why the network ties of those female entrepreneurs develop through the start-up and early growth stage. To achieve this, the research focuses on two areas: first, the structural characteristics of networks, in order to determine the nature of the network ties that those female entrepreneurs develop through time to obtain and reach their needed resources. Second, it focuses on the content of those network structures, in order to understand why those female entrepreneurs' network ties change through time. With this focus on the development process of the network's structural characteristics and their content, the following two research question evolved.

- 1) **Network structure:** How does the Jordanian female entrepreneur's network structure develop to facilitate the start-up and early-growth of their technology-based firm?
  
- 2) **Content of the network structure:** How does the content of the Jordanian female entrepreneur's network structure develop to facilitate the start-up and early-growth of their new technology-based firm?

## **1.3 The research approach**

This research on the development of the female entrepreneur's network adopted an interpretivist paradigm, using an in-depth interview approach to address the research questions. The exploratory nature of this research suggests the qualitative methodology as a more appropriate approach (Blaikie, 2009; Miles and Huberman, 1994) for exploring the network structure, content and evolution of female technology

entrepreneurship in Jordan. The literature argues that studies which adopt a qualitative approach are better placed to provide a richer understanding of entrepreneurial networks, particularly those process-oriented network studies (Jack, 2010; Hoang and Antoncic, 2003). This research, therefore, used the in-depth interview and examined the development process of the network ties of those female entrepreneurs through the use of purposive sampling.

The in-depth interviews involved two-stages of face-to-face interviews in Jordan with the founders of 14 technology-based firms selected from Jordan's technology sector. The use of multiple in-depth interview stages increased the ability to review and confirm the data with the participants and allowed better coverage of the research questions. Computer analysis of the collected data was facilitated through the use of NVivo software. The data analysis included the matching of within and cross-case analysis patterns (Miles and Huberman, 1994). The collected data included description of the network ties' characteristics and content. From the textual data, a rich description of the network ties, in terms of the type of ties, the gender of ties and how, when and why they use different networks, was generated and enabled the researcher to build a better understanding of the female entrepreneur's network structure, content and evolution.

## **1.4 Research contribution**

### **1.4.1 Theoretical contribution**

This research responds to the many calls for more studies of female entrepreneurship activities in Middle Eastern societies (Brush and Cooper, 2012) and the development process of the entrepreneur's network (Jack, 2010), especially of female entrepreneurs in the technology sector (Hampton et al., 2011). In addition, studying women's experience as entrepreneurs is relatively uncommon, as academic studies in entrepreneurship 'persistently rely on male experience to theorize entrepreneurship, and women are studied in terms of their difference' (Hamilton, 2013, p. 90).

The female entrepreneurship literature has attracted relatively little attention, as it represents less than 10% of all research within the entrepreneurship field (Brush and Cooper, 2012). The vast majority of this literature is Western centric (Brush and Cooper, 2012), in particular the work on female entrepreneurs' networks. The contribution of the research at a theoretical level lies in its addition to knowledge through enhancing the understanding of female entrepreneurial processes within the Jordanian context as a case illustration of the Middle East. Further, it informs theory by identifying, for the first time, how female entrepreneurs engage in networking for firm creation and growth in an Eastern context.

Within the female entrepreneurship literature relatively few studies have been carried out on female entrepreneurs' network structure and its development, these studies include: Hampton et al., (2011), (2009) and McGowan et al., (2013). However, these studies fail to explore the content of network structures of female entrepreneurs. This research reveals for the first time the content of different female entrepreneurs' network structural dimensions in the early development stages of the firm. This research, therefore, adds to this literature through findings that explore the development process of the content of female entrepreneur's network structure.

The research, also, contributes to the growing body of work studying process-oriented entrepreneurial networks that includes limited research examining the content of the entrepreneur's network ties (Stam et al., 2014; Lechner et al., 2006). Building upon the current literature, the research findings explore the content of the development process of the female entrepreneurs' network structure. The research adds to network process-based studies that seek to explain the type of contents (i.e. resources) that the entrepreneurs' network structures provide in the early development stages.

#### **1.4.2 Practical contribution**

This research identifies practical implications at the organisational and individual level. The research proposes some implications for both government and non-government technology entrepreneurship support organisations in Jordan. Developing a deeper understanding through evidence which illustrates female entrepreneurs'



experiences in Jordan's technology sector, provides information which might help these organisations to develop more effective support policies for both actual and would-be female entrepreneurs.

This research, also, aims to increase the ability to the female entrepreneurs, at the individual level, to manage and successfully plan their network. The exploration of the entrepreneurial process of female entrepreneurs during their firms' early development stages and the use of network ties for assembling resources, suggests that those female entrepreneurs may be able to develop different strategies for managing their external network ties. First, they need to know the type of network ties that can be relied on and to be able to identify how to reach them. Second, they need to be aware of the type of network contents (resources), and what they are able to obtain or reach through which type of network tie. Third, they need to understand the most appropriate network patterns throughout their business emergence and growth. A mismatch of the business needs at a particular stage and network ties might hinder the growth of those female-owned entrepreneurial firms.

## **1.5 The thesis structure**

This thesis is organised into nine chapters and three main appendices:

The first chapter provides a general introduction to the research background, objectives, methods and contribution. Chapter 2 reviews the theoretical and empirical literature in two research areas- female entrepreneurship and entrepreneurs' networks. Chapter 3 identifies the research methodology, including an explanation of the paradigm and methods adopted to reach the research objectives. Chapter 4 provides an overview of the Jordanian economic, social and institutional context. Chapter 5 introduces a description of the cases that participated in this research.

Discussion of the research findings will be introduced in Chapters 6, 7 and 8. This discussion starts with Chapter 6, which identifies and describes the structural characteristics of the female entrepreneur's network ties, as a basis for addressing the research questions. Chapter 7 addresses the first research question and presents

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detailed findings regarding the development process of the network structure of the informants. Chapter 8 addresses the second research question and presents detailed findings regarding the development process of the content of the participants' network structure. Finally, Chapter 9 concludes with the research findings and discusses the implications of these findings, as well as providing suggestions for future research.

## **Chapter 2: Literature review**

### **2.1 Introduction**

The aim of this literature review is to build a background that provides an explanation for the research objective. This research aims to explore how female entrepreneurs' networks develop to reach and obtain the required resources for their technology-based firms during the early-growth stages. Literature reviews have shown that there are many questions concerning the dynamic process in the entrepreneur's network which are under explored (Jack, 2010; Slotte-Kock and Coviello, 2010; Hoang and Antoncic, 2003). Studies of the development process of female entrepreneurs' networks are very limited within the entrepreneurship field (Hampton et al., 2011). As a result, female entrepreneurs' network development processes have not previously been well explored, with a particular absence of such studies from Middle East societies.

There is evidence within network studies that the entrepreneur's network development process is a result of cultural, social and institutional contexts (Batjargal, 2010). Evidence also suggests that the social context that surrounds the entrepreneur which includes organised social life, family and the workplace, impacts directly on his/her entrepreneurial process (Aldrich, 1989), and hence it varies between Western and Eastern societies (Yetim, 2008).

Since the network is conceptualised as being based on social contact, different network approaches to the process of gathering the entrepreneurial resources might be applied in different countries (Birley et al., 1991). Thus, entrepreneurial social, economic and institutional contexts will arguably have an influence on the entrepreneurial network development process and its benefit for venture formation. Accordingly, if these contexts in which entrepreneurs operate matter, then the question is how the network of those female entrepreneurs in Jordan, as an example from the Middle East societies, develops through their firms' development process.

Building upon the research objective, the research focus is to explore the development process of the network structure and content of Jordanian female entrepreneurs in

technology-based firms. This literature review, therefore, consists of two main parts explaining what has been discussed in the existing literature. The first part of the review focuses on the research issues associated with female entrepreneurship, including female entrepreneurial human, financial and social capital, particularly as it relates to their entrepreneurial networks in technology sectors. The second part provides a review of the relevant models and concepts in the context of the entrepreneur's network ties. As such, this review represents a confluence of two main research areas on entrepreneurship literature: female entrepreneurship and the entrepreneur's networks development and analysis elements.

## **2.2 Female entrepreneurship**

Research on female entrepreneurship is still attracting relatively little attention, but there are a small number of well-developed studies on women's entrepreneurship process (Brush and Cooper, 2012; Bruin et al., 2006; Buttner and Moore, 1997). Within this literature the female entrepreneur 'is defined as a women who has initiated a business, is actively involved in managing it, owns at least fifty per cent of the firm and has been in operation one year or longer' (Moore and Buttner, 1997, p. 13). In that regard, it is important to consider that female entrepreneurs have different pre-entrepreneurial backgrounds, different perspectives about venture creation and development and they are able to build business different sizes (Hampton et al., 2009).

The encouragement of women-owned ventures has become an important tool to overcome high unemployment rates and achieve more economic growth (Stevenson et al., 2010), particularly in those entrepreneurial ventures that add value to society's economic development, such as technology-based ventures (McGowan et al., 2013; Hampton et al., 2011). At present, the proportion of the female entrepreneurial activities varies by societies with marked differences between all economies (Amorós and Bosma, 2014; Kelley et al., 2013; Neergaard et al., 2005). In the United States of America (USA), for example, women-owned businesses constitute 30 per cent of all privately-owned business in the country (Womenable, 2014). In Pakistan, women's involvement in entrepreneurship represents only 1% of women compared to 40% in

Zambia (Kelley et al., 2013). The recent GEM reports across around 70 economies show that the women's participation rate in the early stage entrepreneurial activities in the Middle East and North African (MENA) region and some European countries is the lowest rate among the economies studied (Kelley et al., 2013; Amorós and Bosma, 2014). Despite this, the report shows that, women in the MENA region who enter entrepreneurship are more innovative in introducing new products/services than men and as a percentage match women in developed countries (Kelley et al., 2013).

A number of implications are suggested to explain these differences in female entrepreneurial activity rates from one economy to another (Neergaard et al., 2005). In exploiting opportunities, Aldrich (1989) argues that the entrepreneurial opportunities and the restrictions on implementing them are different between countries. Particularly, women's participation in entrepreneurial activities is influenced by many myths about their ability to succeed in establishing business (Brush et al., 2001). These myths create a negative influence on women's ability to grow a business and have far-reaching consequences for women's involvement in venture creation and growth (Aldrich, 1989).

Other studies explain that the highest women's economic participation rates appear in developed economies such as the USA, where female entrepreneurs receive a high level of governmental support (Amorós and Bosma, 2014; Neergaard et al., 2005). In any economy, society's cultural and financial support play an effective role on the level of the individual's entrepreneurship (Xavier et al., 2012). In this context, Yetim (2008) argues that women entrepreneurship is a phenomenon produced by societies' socio-economic and cultural structures. Therefore, there are many societal differences among countries with regard to the level and nature of female entrepreneurship, where increasing women's economic participation requires support from a range of groups such as investors, bankers, services providers and family (Kelley et al., 2010). Indeed, the nature of societal attitudes plays a vital role given that the entrepreneurs' success depends heavily on several actors in their communities (Kelley et al., 2010).

Women's involvement in entrepreneurship, also, might be affected by women's entrepreneurial intention and drivers that motivate women to select this path, where these drivers and motives of starting a business may differ between regions (Amorós and Bosma, 2014; Kelley et al., 2013). Whilst necessity is the higher motive for starting a business for women in Sub-Saharan Africa, Latin America and the MENA region, women are more opportunity-motivated in developed economies (Kelley et al., 2013). Differences also appear in women's intention to start a business, where across regions women have lower rates of entrepreneurship intention than men (Kelley et al., 2013). In Jordan, for example, men's expectations for starting a business is twice the rate for women (Stevenson et al., 2010).

Overall, female entrepreneurial activities in any society are often influenced by the quality of their human, financial and social capitals as they play a crucial role in their ventures start-up and growth (Cooper et al., 2011). These three kinds of capitals in combination enable entrepreneurs to exploit and pursue a viable opportunity (Burt, 1992). However, women's human, financial and social capital may appear in different forms in different societies and create differences in their economic participation rates. Therefore, an in-depth understanding of female entrepreneurship needs an analysis of the basic capital that shapes their entrepreneurial process.

### **2.2.1 Women's human capital**

Human capital refers to a combination between an individual's qualities such as intelligence and an individual's knowledge and skills that he or she obtains from education and experiences (Burt, 1992). Entrepreneurs' education, knowledge and experience represent the most common human capital dimensions used to analyse the success of their entrepreneurial process (Kim et al., 2006). From a substantive standpoint, the pre-entrepreneurial career that female entrepreneurs possess is critical in shaping and explaining their entrepreneurial process (Cooper et al., 2011).

The individual's education background can affect the probability of starting a business through enabling them to acquire the necessary requisite skills, knowledge and qualifications (Kim et al., 2006). Studies indicate that the gradual changes in societies

have enabled women to access high educational levels (Cortright, 2005). In a study about the role of youth in shaping the economy's success, Cortright (2005) found that women are well-educated and more likely to have a four-year degree than men. The majority of the previous studies regarding the female entrepreneur's human capital, in terms of education level, found no difference between men and women-owned businesses (Brush, 1992).

The subject of education is also relevant in shaping business start-up and growth (Cooper et al., 2011; Brush et al., 2001). The important finding, for those who are studying female technology entrepreneurs, is that women who establish their business often have a high level of educational background and it is more related to their business (McGowan et al., 2012; Cooper et al., 2011). This indicates that, in such sectors, women have to demonstrate a good level of educational attainment to secure a job and then establish a business (Cooper et al., 2011).

Prior start-up experience is also documented as an important element in the female entrepreneur's human capital (Cooper et al., 2011), due to its role in dealing with the many challenges related to starting and developing a business (Kim et al., 2006). Many studies have found that the female entrepreneur's lack of experience concentrates, in a direct or indirect way, on their business size, growth (Carter et al., 2001), income and sales volume (Loscocco and Robinson, 1991). Studies, also, indicate that women are less likely to have relevant experiences that enable them to become entrepreneurs and secure successful business start-up (Carter et al., 2001). However, other studies have found that female entrepreneurs have good pre-entrepreneurial careers (McGowan et al., 2012; Cooper et al., 2011), industry and management experience, and to a degree similar to their male counterparts (Menzies et al., 2004). In this sense, distinction should be drawn between the types of pre-entrepreneurial experience that the women possess (Junquera, 2011).

Women's prior experiences are mostly limited within supervisory levels rather than managerial levels (Robb and Coleman, 2010). Evetts (1993) argues that the reason for women's lack of managerial experience is that building such experience, particularly

in the high-technology sectors, requires a one-dimensional focus on the managerial career without interruption for family commitments. In building good women's human capital, studies suggest that developing professional training programmes is equally a key factor in contributing to improving female entrepreneurs' managerial and technical skills and reduce the impact of the lack of experience on the women's business start-up (Bekele and Worku, 2008). Thus, there have been many calls for more attention to be given by universities and enterprise agencies through professional training programmes, to those who start their business with a lack of workplace experience (Cooper et al., 2011).

The common perception is that female entrepreneurs do not have the right experience and background to develop a successful business (Brush et al., 2001). Hence, women-owned enterprises become generally less attractive to the resource providers, such as ventures capitalists (Menzies et al., 2004). In this context, relevant types of experience can affect the probability of an entrepreneurial start through giving the entrepreneurs a chance to define market opportunities and shape their technical and commercial experiences (Cooper and Park, 2008). Many changes have occurred in the last ten years in the female entrepreneur profile particularly in the technology sector, where women's past experiences have increased and become vital for encouraging these women to start their business (Cooper et al., 2011).

In summary, within the female entrepreneurship literature, Junquera's (2011) review discussed the main factors that affect the human capital of the female entrepreneur, and where these factors and their affect may differ from one culture to another. This review used female profile and gender effects as an alternative to explain human capital sources in women-owned enterprise. A female profile implies female characteristics and choice, where their human capital quality is strongly influenced by their skills, experience, personality traits, age, number of children and family commitments. Gender effects reflect the argument that women face gender discrimination in their professional life in a way that decreases their human capital such as education and experience and, therefore, impacts on their entrepreneurial entry.



This discrimination includes: first, the masculinisation of the business environment, such situations impinge on female entrepreneur's human capital by excluding them from business relationships. Second, discrimination towards women-owned enterprise has negative impacts on their financial access, leadership style, experience and self-perception.

### **2.2.2 Women's financial capital**

Financial capital refers to the financial resources that entrepreneurs need to establish and expand their entrepreneurial ventures (Kim et al., 2006; Brush et al., 2001). The basic assumption is that an entrepreneur with good accessibility and availability of financial resources has a higher chance of succeeding in any economy (Cetindamar et al., 2012). The availability of financial resources is considered as an important indicator for increasing the rate of female entrepreneurial activities (Gupta and York, 2008). Generally, the need for funds is not constrained to the emergence stage; entrepreneurs continually need extra funds for successful business survival and growth (Steier and Greenwood, 2000, 1999). Thus, to ensure successful female entrepreneurial entry and survival, different sources of funding at several stages of the business formation process are required.

The females' entrepreneurial financial resources are mainly acquired from formal and informal investors (Romani et al., 2012; Brush et al., 2001). Formal resources include mainly the venture capital industry, while informal financial resources, that represent the essence of entrepreneurial activities, include founder investments, family, relatives, friends and business angels (Romani et al., 2012; Bygrave and Quill, 2007). It is important to note that the informal financial sources represent the basic funds for the female entrepreneurial start-up (Romani et al., 2012; IFC and CAWTAR, 2007; Brush et al., 2001). However, as those women seek to develop their business informal funds become less likely to support their growth; then more formal financial support clearly becomes important (Brush et al., 2001). Many studies indicate that entrepreneurs' access to formal financial sources is very difficult at the start-up stage for several reasons, including the low legitimacy, high uncertainty and risk that is

related to new ventures (Kim et al., 2006; Hite and Hesterly, 2001; Starr and MacMillan, 1990).

Studies indicate that both male and female entrepreneurs at the emergence stage use the same sources of funding, with women more dependent on family members than bank loans and credit (Romani et al., 2012; Carter and Rosa, 1998). Carter and Rosa (1998) found that entrepreneurs' use of grants and government assistance is relatively low, but women are more likely to use these funding mechanisms. In a study, including more than 2,800 Canadian entrepreneurs, Orser et al., (2006) found that female entrepreneurs are less likely to attract these different kind of external financing sources, such as venture capital, commercial debt and supplier financing. Some studies suggest that this may be associated with the amount of capital that the female entrepreneurs invest in their new business ideas (Carter and Rosa, 1998), where their investment amount in the start-up stage is less than men (Carter et al., 2001). As such, men are more advantaged in the long-term through increasing the ability of their business' ability to attract more capital investment (Carter and Rosa, 1998).

For several reasons, securing business angel and venture capital funds to fuel the female entrepreneurs' ventures start-up and growth is very difficult (Orser et al., 2006; Brush et al., 2002). This is due first, to defining and finding both the required formal and informal networks (Gatewood et al., 2009; Brush, 2002). Second, some studies suggest that the explanation for this is the lack of female entrepreneurs' business experience in the extensive financial arrangements and negotiations with external investors (Orser et al., 2006; Brush et al., 2002). Third, female entrepreneurs establish their businesses in sectors considered as unattractive and less valuable to the venture capital firms (Orser et al., 2006). Fourth, sometimes the low profitability and growth of the women-owned businesses leads to a reduction in the probability of obtaining external investment (Coleman, 2002). Fifth, female entrepreneurs' low start-up investment in their business disadvantages them from attracting equity investments; therefore, finding entrepreneurial funding sources is not a gender inequity problem (Carter and Rosa 1998). However, female entrepreneurs have demonstrated their

ability, in some economies such as in the USA, through several strategies, to establish high growth ventures which have attracted many equity investments (Gatewood et al., 2009; Brush et al., 2002; Brush et al., 2001).

It is important to highlight that female entrepreneurs in developed economies have a greater probability of accessing several alternative sources of financial start-up and growth capital through using government support, their credit cards, applying for several kinds of loans (Cetindamar et al., 2012) and business angel investments (Women's Business Forum, 2011). However, these alternative sources of entrepreneurial financial investments are often not available in developing countries (Cetindamar et al., 2012). In a study about women's financial access in the MENA region, the Women's Business Forum Report (2011) indicates that the financial sources for women are limited to the personal assets. Also, the main external source of funding for female entrepreneurial start-ups and expansion is bank lending, but this source is very limited and unable to cover the demand. The Report also indicates that business angels and corporate venture capital, as a source of female entrepreneurial expansion, are still unavailable. The Report indicates that female entrepreneurs' access to several funding sources in this region is affected by a variety of aspects including lack of government and financial institutional programmes and support. In addition, one of the most important factors is that these women rely upon traditional investment arrangements for business investment referrals rather than using business network relationships to reach investors.

### **2.2.3 Women's social capital**

The female entrepreneurship process, is influenced by many issues relating to their human capital- primarily the lack of work experience, and financial capital, particularly the limited external funds, to fuel the business start-up and growth (Orser, 2006; Menzies et al., 2004; Coleman, 2002). With these types of capital, entrepreneurs' social capital represents a crucial capital for building a more successful entrepreneurial process (Nahapiet and Ghoshal, 1998). This underpins the development of both human capital (Coleman, 1988) and financial capital (Brush et

al., 2002). Through network exchange relationships, entrepreneurs secure unique conduits to formal and informal investors (Steier and Greenwood, 2000; 1999) and build new human capital (knowledge) (Nahapiet and Ghoshal, 1998).

In distinguishing social capital, Burt (1992) found that such capital is different from the other capitals in two ways: first, both human and financial capitals are individual's property while social capital is owed jointly. Second, in the production equation, human and financial capital represents the investment elements that are used to produce the production capabilities. On the other hand, social capital represents the rate of return in which it plays a vital role, transforming the investment elements, both human and financial, into profit. Accordingly, he argues that through social capital, human and financial capital get used and invested. For example, Steier and Greenwood (1999) argue that entrepreneurs can gain more financial experience through building communication with highly experienced actors in their industry. Eventually, the effect of entrepreneurs' human and financial capital on the entrepreneurial process is mediated by their network relationships (Liao and Welsch, 2003).

New venture formation and growth require abundant resources, from financial and physical resources to information and symbolic supports (Kanter, 1984). In order to secure these resources, entrepreneurs continually intend to build ties with the external environment (Hansen 1995; Dubini and Aldrich 1990; Granovetter 1985). These entrepreneurial ties with other external actors form the social capital (Burt 1992). In other words, such capital represents the set of entrepreneurial tangible and intangible resources that are available and accessed through network ties (Hoang and Antoncic, 2003; Greve and Salaff, 2003; Nahapiet and Ghoshal, 1998). In this sense, social capital represents the value that can be derived from network relationships (Borgatti and Foster, 2003).

Anderson and Jack (2002) describe social capital as the product of entrepreneurial network relationships; it also facilitates the process of producing network ties through enabling continuous coordination and development of ties. Within the social capital literature, entrepreneurs' network ties are used as an appropriate analytical approach

for defining entrepreneurs' social capital and considering the impact of such capital on the individuals' actions (Neegaard et al., 2005). This is consistent with Burt's (1997, p. 355) view of the social capital value of a network, defined 'as a function of both form and content'. As such, this suggests that much can be explored about entrepreneurs' social capital through analysing their entrepreneurial networks (Neegaard et al., 2005), at both structural and content levels (Borgatti and Foster, 2003; Burt, 1997). This next section provides a discussion of the female entrepreneur's network.

### **2.2.3.1 Female entrepreneurs' networks**

The entrepreneurial process is a result of the entrepreneur's efforts to access the required elements to enable exploitation of a viable opportunity (McGowan et al., 2013; Aldrich, 1989). The important thing in this formulation is that entrepreneurs need a network of ties to link him/her with the resource providers (Aldrich, 1989). Studies have found that female entrepreneurial entry and growth success occur more among women who have more networking capabilities (Ahmad and Naimat, 2011; Leskinen, 2011; McGregor and Tweed, 2002). These networking activities are comprised of several dimensions in terms of enabling them to acquire the necessary knowledge and strategies for their entrepreneurial entry, to open new contact channels (Leskinen, 2011; Ahmad and Naimat, 2011), to share information, to obtain business idea validity and to secure resources and support (Hampton et al., 2009). In terms of the usefulness, cost and rate of use, networks represent an effective source of information that the female entrepreneurs rely on, from the early business stages (Nelson, 1987).

Some studies found that the female entrepreneurs are active in building network contacts as they have high quality (Hampton et al., 2011) and diverse relationships and engage in networks of a comparable size to their male counterparts (McGowan et al., 2013; Cromie and Birley, 1992). They also have a high preference for building collaborative network relationships that yield high resource accessibility and hence business success (Sorenson et al., 2008).

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There is an agreement, however, that female entrepreneurial networks do not have large and diverse network ties (Ibarra, 1993), are more likely to be limited to strong social ties with their family members and include limited weak ties (Xie, 2014; Yetim, 2008; McGregor and Tweed, 2002; Katz and Williams, 1997). The strong-based social ties, particularly with family members, are the main ties formed, for example, by the female entrepreneurs in China with high impact in the socio-cultural context (Xie, 2014). Verhuel and Thurik (2001) argue that the female entrepreneurs have limited financial networking practices and they spend limited time in networking activities, which in turn impact on their ability to access financial resources.

Aldrich (1989) argues that female entrepreneurial networking activities are affected by many challenges leading to limitations in their network size, density, diversity and reachability. Limited female entrepreneurs' networking activities are historically shaped by the women's family commitments (Hampton et al., 2009; Alrich, 1989), which limited their ability to spend more time in networking. On the other hand, the above studies that described the female entrepreneurial network practices have been conducted in a different social context. The countries in question include the USA (Sorenson et al., 2008), Northern Ireland (McGowan et al., 2013; Hampton et al., 2011), UK (Cromie and Birley, 1992), Netherlands (Verhuel and Thurik, 2001), China (Xie, 2014), Pakistan (Ahmad and Naimat, 2011) and Turkey (Yetim, 2008); thereby, social context is an important matter. What is notable here is that the networking behaviour is a result of a set of social norms and their associated meaning (Curran et al., 1993).

Other studies indicate that the female pre-entrepreneurial background plays a vital role in their network and networking activities (Xie, 2014; Cooper et al., 2011; Leskinen, 2011; Carter et al., 2001). For example, lack of female entrepreneurs' previous managerial experience results in their exclusion from relationships that could be built on during their career and connect them with the resource providers who may help them to get started (Mayer, 2006). Limited financial management experience also represents one of the important issues with a negative effect on their ability to build

relationships with formal and informal financial resource providers (Brush et al., 2002). Farr-Wharton and Brunetto (2007) argue that female entrepreneurial behaviour in networking depends on the type of network relationships, and will vary with their engagement with and exploitation of each type of tie. In the intra-gender analysis, the female entrepreneurs who intend to develop successful business networks are usually more educated and affiliated in nature (McGregor and Tweed, 2002). In addition, higher social capital appears among the female entrepreneurs who have previous professional experience (Xie, 2014).

Within the female entrepreneurial network literature, Leskinen (2011) indicated the female entrepreneurial success in the networking process primarily depends on their entrepreneurial profile characteristics. Thus, female entrepreneurial networking capabilities are greater among women who have experience, the ability to work and who enjoy communicating with others, as well as those who possess good motivation for growth, persistence and a sense of taking responsibility (Leskinen, 2011). Furthermore, findings suggest that the female entrepreneur's view of her business as a holistic system is important in their entrepreneurial networking process (Leskinen, 2011). This view reflects the extent to which female entrepreneurs see their business as a centre of various relationships including community, business and family (Brush, 1992).

Success in maintaining and developing effective entrepreneurial networks is clearly important for female entrepreneurial entry and growth (Hampton et al., 2011, 2009; Anderson et al., 2007; Mayer, 2006; Brush et al., 2002; Carter et al., 2001; Aldrich, 1989). The importance of these network relationships increases within the context of entrepreneurial ventures that require more extensive tangible and intangible resources (Cooper, 2000; Anderson et al., 2007), as well as in male-dominated fields such as high-technology, entrepreneurial ventures (Hampton et al., 2009; McGowan et al., 2013).

On the other hand, requests for more awareness of gender and works which study women's experiences as entrepreneurs have been made in the entrepreneurship

literature (Hamilton, 2013; Ahl, 2004). Within much of the current literature, female entrepreneurs' experiences are not well-represented, given that many entrepreneurship studies have theorised their arguments building on male experience (Hamilton, 2013). For example, methodologically, Stevenson (1990) highlighted that some of the widely used studies in entrepreneurship have relied on the male experience, where the proportions of female entrepreneurial participants in the samples used in these studies has been very low and in some case there have been no female participants at all. Thus the sample of these studies have not fairly represented or reflected female entrepreneurs' experiences (Stevenson, 1990:242). Also, in her review, Ahl (2004: 61) found 'the discourse on entrepreneurship in the economic literature to be male gendered. It is not gender neutral'. Therefore, the need for more research to reveal women's experiences as entrepreneurs has been highlighted.

Thus, as this research focuses on the female entrepreneurial network in technology ventures, the next two parts will discuss the female technology entrepreneur's network and gender issues in the female entrepreneurial network.

#### **2.2.3.2 Female technology entrepreneurs' networks**

In the technology sector, female entrepreneurial involvement is still under-represented and in all economies (Cooper et al., 2011; Mayer, 2006). It needs support from several stakeholders due to its important role in the development of economies (Cooper et al., 2011). Recent research pointed to the good technological education and experience that women who decide to enter the technology sectors, mostly possess (McGowan and Cooper, 2012; Cooper et al., 2011). This relevant background has an important influence in building their technical and business capabilities and, hence, shaping their entrepreneurial entry and growth (Cooper et al., 2011). In addition to this, the role of prior venture background in creating the initial female entrepreneurial networks is relevant (Klyver et al., 2007).

Within the technology sector, female entrepreneurs are more likely to start their business in industries related more to services such as computer system design,



software publishing, consulting services, web and internet-related services (Mayer, 2006). However, female entrepreneurs' involvement in the technology manufacturing sectors that require high capital is significantly limited (Mayer, 2006). This can be traced back to different structural barriers including the lack of their knowledge in the high-technology areas (Robb and Coleman, 2010) and inability to secure high financial capital to start and grow such firms (Mayer, 2006). An investment in these types of firms requires substantial amounts of funds from an early development stage; thus it is important to secure an equity investment such as venture capital (Robb and Coleman, 2010; Elfring and Hulsink, 2003; Almus and Nerlinger, 1999).

The literature indicated that female entrepreneurs usually have limited access to the venture capitalists' funds ((Brush et al., 2001)). For example, in the period between 1953 and 1998, female entrepreneurs received 4.8 per cent of the total venture capital funds in a sample including 8,298 investments (Brush et al., 2001). Researchers studying female technology entrepreneurs have traced this back to the lack of good network relationships, due to these relationships' role in accessing the entrepreneurial firms' financial capital (Robb and Coleman, 2010). In fact, the basic argument is that the network ties play an important role in obtaining access to venture capitalist financing; however, the structural barriers place women outside certain types of network ties, particularly financial networks (Welter et al., 2014).

To achieve a successful entrepreneurial entry and growth in such sectors, building a high quality of network relationships is important for those female technology entrepreneurs (Hampton et al., 2011, 2009). Network ties provide them with an effective direct access to different resources or act as a channel to reach the resource providers (McGowan et al., 2013) and new opportunities in the uncertain technology environment (Moensted, 2007). Moreover, the greater the development of these networks through the firm's development process, the greater are the real benefits that can be obtained (Sullivan and Ford, 2014; Gulati et al., 2002).

Studies on female technology entrepreneurs' networks found that these entrepreneurs have an ability to develop different highly sophisticated entrepreneurial relationships

(Hampton et al. 2011, 2009). Building on qualitative studies, Hampton et al., (2011) and (2009) examined the development process of the female technology entrepreneurs' network quality. Their findings show that female technology entrepreneurs reached greater quality of network relationships as their firms grow to more established businesses. Their findings reflect that the female technology entrepreneurs have a good quality level of network ties. They argue that those female entrepreneurs' pre-entrepreneurial industrial experience enabled them to build this level of network tie quality.

### **2.2.3.3 Female entrepreneurial networks and gender**

To be successful in a sector where sources of information are mostly dominated by men, female entrepreneurs must be well-integrated and diversified in terms of their network of contacts (Buttner, 1993; Smeltzer and Fann, 1989). Essential for this reasoning is that women who enter the male-dominated business network must secure a variety of sources of information that are needed for the business to grow (Smeltzer and Fann, 1989). Researchers that are mainly concerned with gender differences in the entrepreneurs' network suggest that differences may exist in the gender composition of the male and female entrepreneurs' networks (Klyver et al., 2007; Cromie and Birley, 1992; Aldrich 1989).

The literature indicates that female entrepreneurs are largely present within other female-dominated networks (Xie, 2014; Klyver, 2011; Carter et al., 2001; Ibarra, 1993; Smeltzer and Fann, 1989). In fact, women do not have strong participation in the business associations, networks and clubs, which are traditionally dominated by men (Hampton et al., 2009). Some studies found that female entrepreneurs may tend to prefer the women-dominated networks due to a lack of personal self-confidence at an early stage in entering the male-dominated networks (Hampton et al., 2009; Tonge, 2008). Other researchers argue that compared with entrepreneurs, the female entrepreneur is perceived as a less competent member within the business network (Smeltzer and Fann, 1989).

Historically, female entrepreneurs have been left out of the formal social organisation network or what are called 'old boy networks', which enable male entrepreneurs to gain a distinct access to business networks (Buttner 1993, p. 62). These networks emerge through groups of social organisations, friends' contacts and country clubs, and such like; they provide an instrumental and social support (Knouse and Webb, 2001). Thus, men's business networks are more likely to have contacts with other men, while the female entrepreneur becomes a key source of information for other women rather than for men (Carter et al., 2001; Buttner, 1993). On the other hand, this old boy network has encouraged women to focus on establishing more deliberate networking strategies and make a sustained effort in order to form well-established network relationships other than those adopted by men (Buttner, 1993; Smeltzer and Fann, 1989).

Some gender differences have also been cited in the way male and female entrepreneurial networks are developed (Klyver et al. 2007). For example, Smeltzer and Fann (1989) found that the male entrepreneurs develop more formal networks to obtain the necessary information while women are more reliant on informal sources. Researchers argue also that there are differences among men and women in their networking motives and priorities (Buttner, 1993; Aldrich, 1989). Unlike men who seek out personal gains and see networking as an opportunity to access venture resources, women tend to seek more social advantages and they see the network relationships as responsibilities and commitments (Buttner, 1993; Aldrich, 1989). Other gender differences may appear both in the networking process and benefits that are gained from this process (Aldrich, 1989). These views, however, are contested among researchers, where there is little agreement about the gender differences in the use and type of network relationships in which business founders are involved (Neergaard et al., 2005). Also, these findings have been influenced by the work that investigates the role of external relationships in firms' success (Carter et al., 2001).

For those studying the process of entrepreneurial network development, they conclude that there are gender differences in the sex composition of the female entrepreneurial

networks, particularly in the earlier stages of the venturing process, but these differences decline in the later stages (Hampton et al., 2009; Klyver et al., 2007). As female entrepreneurial ventures grow, their networks expand to include more diverse contacts with both men and women (Hampton et al., 2011). In male-dominated sectors such as the technology sectors, female entrepreneurs become more aware in the established business stages of the importance of getting involved in a wide range of professional relationships rather than restricting their contacts to the female-dominated networks (Hampton et al., 2011, 2009).

In investigating both male and female technology entrepreneurs' networks, McGowan et al., (2013) found gender similarities in the quality and dynamic process in their network ties. They showed how both male and female technology entrepreneurs appeared to have the same level of sophistication in their way of developing network ties. The lack of gender differences has been traced back to the nature of the technology environment, where the ventures' survival in this dynamic environment is directly associated with entrepreneurs' ability to develop the necessary contacts and knowledge to mobilise the required resources (McGowan et al., 2013).

Ultimately, developing an effective entrepreneurial network is clearly crucial for women-owned businesses within the context of male-dominated sectors such as technology ventures (Hampton et al., 2009). Since the nature of these ventures require more diverse, intensive and specialist sources of tangible and intangible resources (Cooper, 2000; Anderson et al., 2007), the female technology entrepreneurs need access to a wide range of relationships including more mixed gender ties (Hampton et al., 2011). Furthermore, having a business within the technology community puts female entrepreneurs in 'a heavy male-dominated environment where most of those with whom they network are men' (Hampton et al., 2009, p. 8). In this situation, it is important for female technology entrepreneurs to be concerned about their entrepreneurial network sex composition and to diversify their network relationships (Hampton et al., 2011, 2009).

Therefore through a critical review of the female entrepreneurship literature, the researcher identified two main gaps:

**First:** The above review of the female entrepreneurship and female technology entrepreneurs' network research is mainly dominated by Western-based studies. Thus, if female technology entrepreneurs work in a different socio-economical context, then the question is what these networking activities look like and how network ties for these entrepreneurs are developed throughout their firms' development process. In studying the socio-economical context, Yetim (2008) argues that the entrepreneurship characteristics in the West and East are different according to the dominant culture. In a work about the entrepreneurs' network across different cultures, Hitt et al's. (2009) study found that the entrepreneurs' socio-economic context has an influence on their networking activities. Significantly, studies exploring the female entrepreneurial process and their networks' role in the emergence and development of their firms in the Eastern context, are absent from the literature. This research gap identified within the female entrepreneurs' network literature, is addressed by this research, providing for the first time, insight into the network development model of female entrepreneurs in the Jordanian technology sector; this will be revealed in Chapter 7.

**Second:** The female entrepreneurs' network studies, in addition, focused their examination on some structural characteristics of the network, including mainly personal strong ties and business ties. Research investigating different female entrepreneurs' network structures is limited to some studies such as: Hampton et al., (2011) and McGowan et al., (2013). However, these studies did not examine the content of these network structures as a variable of network analysis. This research gap identified was within the female entrepreneurs' network literature, where this research provides an initial effort to peer into this gap as will be shown in Chapter 8.

The focus of this research is on the process of female entrepreneurial network development in terms of the network structure and its content development through time. There is a lack of network studies within the female entrepreneurship literature. Therefore, in order to facilitate an understanding of the research's theoretical

background, design and analysis, the next part of this literature review provides a review of the relevant models and concepts in the context of the entrepreneurial network development process. The aim of this is to develop an in-depth understanding of how the entrepreneur behaves in the networking process.

### **2.3 Entrepreneurs' networks**

The network is described 'as a set of actors connected by a set of ties' (Borgatti and Foster, 2003, p. 992). It describes an individual's relationships that he/she seeks to build with other actors (Hampton et al., 2009). This network consists of a set of dyadic ties that links the focal individual with other actors (Wasserman and Faust, 1994). This definition implies a dual interlocked level of analysis which includes the dyadic level and large network level (Hite and Hesterly, 2001).

At the dyadic level, entrepreneurial network studies have examined the interaction between pairs of persons (Dubini and Aldrich, 1991). Simultaneously with the analysis of entrepreneurs' network dyadic ties (Hite and Hesterly, 2001), an examination of the larger network system reflects the connections between these ties, where the focal actor is at the centre (Wasserman and Faust, 1994). Since the change in the larger entrepreneurial network 'result(s) from the aggregation of specific changes at the dyadic level' (Hite and Hesterly, 2001, p. 277), this research examines the dyadic ties through focusing on the analysis of the aggregation of dyadic ties into the larger network system of female technology entrepreneurs. This simultaneous analysis is inevitable, because the change in dyadic ties directly influences the form of the larger network patterns (Hite and Hesterly, 2001).

Another duality in the level of analysis within entrepreneurs' network-based studies reflects the linkage between the entrepreneur's network and firm's network, especially in the early development phases of the firms (Capaldo, 2007; Hite and Hesterly, 2001). In fact, network actors and their actions are often seen as interdependent (Wasserman and Faust, 1994). In addition, in social contact, individuals usually 'have mixtures of motives and consequently act in ways difficult to describe in terms of pure self-

interest', where individuals pursue simultaneously multiple economic and social purposes in their relationships (Granovetter 2000, p. 4). This is not particularly surprising given that the entrepreneur acts on behalf of his or her firm or as an 'agent of the firm', especially during the emergence stage (Hite, 2005, p. 114).

Accordingly, the entrepreneur often brings his/her personal relations to the firm network to acquire the necessary resources for successful firm formation and growth (Brass et al., 2004; Larson and Starr, 1993). This association and overlap between the entrepreneur's and the firm's network is demonstrated in various entrepreneurial network studies which found that the entrepreneurial context is highly centralised on the entrepreneur's actions (Hite 2005; Jack et al., 2004; Granovetter 2000, 1985). In the emergence stages, each entrepreneur represents a hub of his or her own venture (Johannisson, 1998). Consequently, and consistent with previous work on the entrepreneurial network (Hite and Hesterly, 2001), this research focuses on analysing the female entrepreneur's ego network and analysing her network at dyadic and large network structures.

Studies in the network analysis emerged as a new field of inquiry within the entrepreneurship literature in the 1980s (Hoang and Antoncic, 2003). In 1985, Birley's study introduced the network concept within the entrepreneurship field. That study investigates the entrepreneur's involvement within the network of relationships in his/her external environment during the entrepreneurial process. The study found that many resources, information, advice and endorsements of the industry can be accessed through both informal ties include family, friends and formal ties, such as banks, lawyers, local government and small business administration.

In studying the entrepreneurial firms, Birley and Cromie (1988) argue that the network builds upon two main arguments: first, an entrepreneurial firm is required to gather resources from external sources. Second, the entrepreneur usually uses his/her personal networks to access these resources. Under these conditions, new firm formation is described as a 'processes by which the essential relationships between an entrepreneur and resource providers evolve to create an organization' (Larson and

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Starr 1993, p. 5). In addition, firm growth is more likely to be accommodated through dependence on the firm's resource contacts (Jarillo 1989). Building on resource acquisition perspectives, many scholars have analysed the entrepreneurial process (e.g., Sullivan and Ford, 2014; Hite and Hesterly, 2001; Butler and Hansen, 1991). They argue that entrepreneurs do not have enough resources and usually face resource acquisition challenges (Hite and Hesterly 2001).

Social network researchers analyse the entrepreneur's network at two basic explanatory levels, including structuralist and connectionist (Borgatti and Foster, 2003). At the individual level, studies investigate the ties' structure or configuration in the personal network (Burt, 1992). These structuralist studies have focused on examining network size, density, diversity, centrality, reachability and strength of ties (Hoang and Antoncic, 2003; Dubini and Aldrich, 1991).

Connectionist studies investigate the benefits that can be acquired through personal network ties (Borgatti and Foster, 2003). These connectionist studies have examined the effective network structural characteristics that help in accessing critical resources for the venture (Semrau and Wener, 2014; Martinez and Aldrich, 2011; Hampton et al., 2011; Capaldo, 2007; Hite and Hesterly, 2001; Steier and Greenwood, 1999). Some other studies examined the role of individuals' formal and informal ties in the venture creation process (Birley, 1985) and types of the entrepreneurs' network ties and their benefits (Jack et al., 2004; Lechner and Dowling, 2003)<sup>1</sup>.

The process of building and rebuilding resources and contacts through the business development phases is necessary in the process of reaching and obtaining the required resources and facing its challenge (Hite and Hesterly, 2001; Larson and Starr, 1993)<sup>2</sup>. However, studies on networks lack a well-defined theory and have instead been

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<sup>1</sup> Section (2.3.3) will provide more detailed discussion about these network elements.

<sup>2</sup> Section (2.5.3) will provide more detailed discussion about the nature of this dynamic process within the entrepreneurial network relationships.



influenced by a number of theoretical perspectives stemming from the theory of exchange in anthropology, sociology and micro-oriented fields (Hoang and Antoncic, 2003). The most relevant theoretical perspectives that has been utilised for analysing network relationships within network studies are organisational views of resource dependence (Bluedorn et al., 1994). The next section will provide a brief discussion of this theory.

### **2.3.1 Resource dependence theory**

The resource dependence theory builds upon an argument explaining how the firm's need to acquire external resources will shape the behaviour of this firm (Pfeffer and Salancik, 1978). The theory proposes that the need for resources makes the firm dependent on the external resource providers (Pfeffer and Salancik 2003). Hence, in order to survive, the firm is dependent on obtaining resources from several actors within the external environment (Pfeffer and Salancik, 2003). Firms in their early development stages usually do not have sufficient internal resources to secure successful emergence and growth (Marion et al., 2015; Jarillo, 1989; Birley and Cromie, 1988). As a result, dependence on obtaining external actors' resources represents an effective approach for entrepreneurs (Timmons, 2009). This dependence happens when the firm does not 'internally control all of the conditions necessary for the achievement of an action' (Pfeffer and Salancik 1978, p. 40). Building on this theory, and consequent on interdependency, the firms attempt to manage uncertainty and constraints of the environment through two strategies including alliances and coordination (Pfeffer and Salancik 2003).

According to their later work, Pfeffer and Salancik (2003) indicate that unlike alliance strategies that are built on ownership in order to manage inter-firm dependence, a coordination strategy has more flexibility. This arises from the inter-firm linkages that are established through communication and consensus, and build on voluntary behaviour. They found that the organisation can obtain four benefits through coordination of inter-firm relationships. First, information about the other's organisation activities such as cost, price and strategic plans can be obtained. Second,

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access to new information about other firm that is related to the focal firm, can be secured. Third, an effective base for gaining support from the external important actors can be ensured. Fourth, these linkages also help firms to establish their legitimacy.

According to this theory, they found that there is evidence of the importance of the social network for the firms in managing uncertainty. In developing the interaction between individuals, they argue that ‘the more each becomes enmeshed in the social network of the other, such that there are overlaps in friendship networks and other business acquaintances, the more binding their relationship becomes and the more stable and predictable it is likely to be’ (Pfeffer and Salancik, 2003, p. 146). The major argument from this perspective relates to the importance of formal and informal relationship in acquiring the required resources for the firms (Pfeffer and Salancik, 2003). This argument makes the resource dependency theory more adoptable within entrepreneurial network studies.

The current study builds upon an argument that female entrepreneurs’ network ties develop through the early development stages of the firm and female entrepreneurs utilise network ties to address different resource dependency at each stage of the firms’ development process. Thus, different types of resource are required at different business stages (Larson and Starr, 1993; Butler and Hansen, 1991; Birley and Cromie, 1988). In gathering these resources, the entrepreneur as a focal actor, depends on using others actors’ resources in the external environment (Timmon, 2009; Hite 2005). Accordingly and due to the high dependency, particularly in technology-based firms (Bailetti, 2012), understanding of the firm’s entrepreneurship process in the early development stages, requires an examination of the entrepreneur’s behaviour in accumulating and organising the required resources (Sullivan and Ford, 2014).

As noticed in the above discussion, organisational theorists propose that the organisation seeks to develop ties with those who own the required resources (Pfeffer and Salancik 1978). In this context, entrepreneurship scholars have emphasised the role of social networks (Gulati 1995), especially in launching and growing new firms (Larson and Starr, 1993). Entrepreneurs during early development of firms ‘might use

ego networks to manage changing resource dependencies' (Sullivan and Ford, 2014, p. 565). Building upon this, therefore, the current research focuses on the importance of network ties to reach and obtain the required resources from other actors through the early stages of development of Jordanian female entrepreneurs in technology firms.

### **2.3.2 Network elements**

The entrepreneur's network is described 'as patterned relationships between individuals, groups and organizations' (Dubini and Aldrich, 1991, p.305) and analysed through using both the structure and the content of his/her network ties (Borgatti and Foster, 2003; Burt, 1992). Both the network structure and its content, thus represent the essential elements in the network analysis process (Hoang and Antoncic, 2003; Borgatti and Foster, 2003). Taking these interrelated parameters together provides a more comprehensive picture and broader understanding of the entrepreneur's network ties (Slotte-Kock and Coviello, 2010) and their role in the reaching and acquisition of resources (Lechner and Dowling, 2003). Exploring both network elements together helps explain who the entrepreneurs reach and how they reach out through (structure) and what they reach (content) (Burt, 1992).

The structure of the network is described 'as the pattern of direct and indirect ties between actors' (Hoang and Antoncic, 2003, p. 170). It reflects the entrepreneur's structural position within the network (Burt, 1992), which in turn, contributes to determining the extent and range of the reached and obtained resources (Moran, 2005; Borgatti and Foster, 2003). Network structure has a crucial role in explaining the individual's ways of utilising the networks to reach a specific goal (Granovetter, 1973), particularly, in creating and growing new firms (Hite and Hesterly, 2001; Larson and Starr, 1993). Several structural characteristics within the network-based literature have been employed to describe the presence or absence of the relationships between the network actors (Hoang and Antoncic, 2003, p. 166), including: diversity, density, reachability (Dubini and Aldrich, 1991), centrality (Freeman, 1979) and strength of ties (Granovetter, 1973). The content that the entrepreneurs obtain through these network structural characteristics is numerous (Hoang and Antoncic, 2003).

*The strength of network ties*

This network dimension describes the attributes of the ties (Dubini and Aldrich, 1991; Granovetter, 1973). Granovetter (1973, p. 1361) described the strength of ties ‘as a combination of the amount of time, the emotional intensity, the intimacy and the reciprocal services’, which are involved in entrepreneurial ties. Building on how network actors behave in their relationships, a distinction is drawn between weak and strong ties in the egocentric network (Granovetter, 1973).

Within the entrepreneurial network-based literature, frequency, intensity and duration of partners’ interactions represent the most common indicators for measuring how strength of ties is configured (Capaldo, 2007). Therefore, weak ties are described by relatively low frequency, intensity and duration of interactions, whereas strong ties reflect closeness relationships and they are characterised by higher frequency, intensity and duration of interactions (Capaldo 2007; Granovetter, 1973). On the other hand, Jack et al., (2004) and Jack (2005) in their ethnographic studies suggest considering the tie’s function and depth of knowledge for understanding tie strength. Jack (2005) argued that the strength of ties should be differentiated not only by ties’ frequency and intensity of interaction, but also through using the ties’ content including ties’ usefulness, trust and types of information that flow through these ties. Thus, in addition to Granovetter’s argument, earlier literature considered the degree of closeness (Sullivan and Ford, 2014; Kontinen and Ojala, 2011; Jack et al., 2004), trust (Söderqvist and Chetty, 2013; Jack, 2005), knowledge, familiarity (Jack 2005) and commitment (Söderqvist and Chetty, 2013; Rowley et al., 2000) as the main attributes that influence the degree of entrepreneur’s ties strength.

Other studies tend to measure the strength of ties through classifying the types of the network relationship. Thus, strong ties are considered to include members such as family and friends (Granovetter, 2005; Hoang and Antoncic, 2003). By contrast, weak ties are based on business transactions (Starr and MacMillan, 1990), which are composed of members such as business partners and acquaintances (Hoang and Antoncic, 2003). However, some other researchers have used multiplex as an indicator

of tie strength (Staber and Aldrich, 1995). Multiplex reflects the extent to which single dyadic ties can provide multiple of content (Hoang and Antoncic, 2003; Larson and Starr 1993). Typically, dyadic ties vary from one-dimensional relations to multiplex relations, when entrepreneurs obtain different benefits from different ties (Larson and Starr, 1993). Aldrich (1989) argues that a dyadic direct tie with one purpose is also an indicator for reflecting the strength of ties. Thus, the strength of ties could be multiplex ties, but also it could be based on one-dimensional content (Granovetter, 1973).

The content of the network strength of the ties' structure appeared within the literature through explaining the role of strong and weak ties. The content of the strong type of ties comes from being considered as a source of emotional, financial support (Hite and Hesterly, 2001) and fine-grained knowledge (Uzzi, 1997). Such ties provide better information, which is cheap to access and trustworthy (Granovetter, 1985). In studying the firms' relationships, these types of network ties are considered as key sources to support joint problem solving (Uzzi, 1997; Larson, 1991) and promote trust-based relationships (Rowley et al., 2000). Other work has found that the strong ties represent an effective instrument for entrepreneurs to invoke weak ties (Jack, 2005), and in particular, to provide access to the new ties with whom they are not connected (Jack, 2005; McEvily and Zaheer, 1999).

Although there are advantages in strong ties, these ties are seen as relationships which are developed in the same circles (Granovetter, 2005), and which in turn, lead to a restriction of the entrepreneur's network within a narrow circle, limiting his/her accessibility to new information (Capaldo, 2007). Thus, such ties provide high level of redundant information and they have poor ability to bridge structural hole (Burt, 2000). Furthermore, researchers have found that over-reliance on strong ties over time represents a growth problem for entrepreneurial firms (Lechner et al., 2006; Greve and Salaff, 2003) and decreases the firm's strategic responsiveness to external changes (Capaldo, 2007).

The findings of research studying weak ties reported that the main content of these ties comes from their vital role in enabling entrepreneurs to move between different social

clusters (Burt, 1992). In his work about the strength of ties, Granovetter (1973) hypothesised that weak ties enable individuals to reach new information, due to their greater ability than strong ties to create bridges between members in different groups. Hence, such ties are an important source for acquiring diverse resources and novel information, which might enable entrepreneurs to explore opportunities (Batjargal, 2010; Granovetter, 2005) and maintain greater growth in the firm (Lechner and Dowling, 2003; Rowley et al., 2000; Uzzi, 1996). Other researchers have focused on the importance of weak ties in reducing the risk of high dependency on a narrow range of relationships and increasing openness to new market trends (Capaldo, 2007). Conversely, some researchers have argued that a large amount of weak ties 'can mute and muddle one's sense of identity and interests' (Granovetter, 2000, p. 10), as well, since it affects the level of trust and governance mechanisms (Rowley et al., 2000) and it takes a large amount of time to create and maintain these ties (Hitt et al., 2009).

### *Network density*

Dense network structure reflects the extent of familiarity among network actors (Wasserman and Faust, 1994). It is made up of entrepreneurs' strong direct ties, where most network actors know one another (Granovetter, 1973). The content of the dense network structure appeared to play an important role in the entrepreneur's knowledge creation process (Ozdemir et al., 2014). Studies also indicated that such structure is more likely to be advantageous in decreasing uncertainty and risk in exchange relationships as well as increasing the awareness of opportunistic actions (Moran, 2005; Simsek et al., 2003). In addition, this structure is important in defining and establishing shared behavioural norms among the partners (Granovetter, 2005). Despite these benefits, dense structure often provides redundant information, which reduces the amount of novel information that the focal actors are receiving (Lechner and Dowling, 2003; Rowley et al., 2000; Granovetter, 1973), particularly as the firm grows (Martinez and Aldrich, 2011; Hite and Hesterly 2001).

*Network diversity*

Diverse network structure reflects the variety of resources which entrepreneurs can obtain and access through other different actors (Witt et al., 2008). Most researchers usually relate such network structure with the notion of having different type of ties (Hampton et al., 2011; Jack et al., 2004). In describing the content of the diverse network structure, studies indicated that entrepreneurs can reach new opportunities (Aldrich, 1989; Rowley et al., 2000) as well as diversify the resources that can be accessed through building different types of tie (Hoang and Antoncic, 2003) and.

Some studies have investigated network content in terms of the type of the resources that can be gained from these sources (Uzzi, 1997; Curran et al., 1993; Larson, 1992; Birley, 1985). In this line of investigation, studies have indicated that entrepreneurial network ties originate mainly from formal and informal contacts (Birley, 1985). The theoretical and empirical literature indicates that the informal or social contacts include mainly family, friends and previous business relationships (Curran et al., 1993; Larson and Sattr, 1993; Birley, 1985). These relationships represent the groundwork for new entrepreneurial ventures as they secure access to financial sources, practical help and advice as well as social and sales support (Larson and Sattr, 1993). For example, in a sample including 500 firms, Bhide (1999) found that family contacts represent the key source of initial funds rather than banks, angels and venture capitalists.

Formal or business-based contacts include business partners, bankers, accountants, lawyers, consultants, customers, suppliers (Drakopoulou-Dodd et al., 2006; Staber and Aldrich, 1995; Birley, 1985) and enterprise agencies such as Chambers of Commerce, trade associations and professional service associations (Curran et al., 1993). Studies show that several type of content can be accessed through these kinds of contacts; for example, new business information, professional advice, expansion funding (Hite and Hesterly, 2001; Steier and Greenwood, 1999) and brokering services (Hampton et al., 2009). Ties with suppliers, customers, competitors and expertise are vital for accessing specific market information, new product ideas (Jack et al., 2004) and know-how (Powell, 1990). Hite and Hesterly (2001) note that entrepreneurs are different in the

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‘compositional quality’ of ties that affect the entrepreneurial process. They refer to compositional quality as the extent to which an entrepreneur’s ties can provide required entrepreneurial resources. Their argument is that the greater the ability to build high compositional quality of network ties, the more strategic resources can be obtained, particularly those resources which are important in the emergence stage of entrepreneurial firms.

### *Network centrality*

Network centrality structure describes the actor position within the network (Hoang and Antoncic, 2003). Within the entrepreneurial network literature, network centrality has been measured through ‘betweenness’, closeness and degree centrality (Gulati et al., 2002; Freeman, 1979). Betweenness centrality describes the extent to which an actor falls between two other unconnected actors (Gulati et al., 2002). The basic argument within this form of centrality demonstrates that the strategic position’s achieved through having more control of the communication between pairs of other actors who are not connected directly (Freeman, 1979). Basically, the betweenness centrality is used to reflect the focal actor’s power and status (Borgatti and Everett, 2006).

On the other hand, closeness centrality as a tool for measuring the entrepreneur’s network centrality, defines the distance from a focal entrepreneur to all other network actors (Hampton et al., 2011). It indicates how intensely the actor is connected to the other actors (Gulati et al., 2002). This measurement mechanism is also considered as indicating a dense network and strength of ties. Degree centrality describes the number of the actors who are involved in a focal actor’s network (Freeman, 1979). Typically, the degree is operationalised in terms of the focal entrepreneur’s network size (Borgatti and Everett, 2006; Hoang and Antoncic, 2003). Thus, the degree as a strategy for measuring the entrepreneur’s network centrality is conceptually similar to the size of a network in that it describes the number of other individuals that the entrepreneurs can reach (Hoang and Antoncic, 2003; Borgatti and Everett, 2006).



The main content of the entrepreneur's centrality through having a position within their network is summarised in providing access to information (Freeman, 1979) and communication control (Freeman, 1979). Gulati et al., (2002) indicated the role of the degree centrality in increasing the firm's visibility to the other network actors. Many studies suggest a positive association between the large network and the amount of resources and information that can be obtained (Siu and Bao, 2008; Hoang and Antoncic 2003; Gulati et al., 2002). Other studies have found that a large network size could hinder venture growth, due to the time and cost spent in evolving and maintaining the networks (Hitt et al., 2009). Although the degree centrality and network size are cited as good indicators of the amount of resources that can be gained through large networks (Hoang and Antoncic, 2003), these measures do not reflect the relative advantages that are present in specific relationships within the entrepreneurial network (Gulati et al., 2002).

### ***Network reachability***

Network reachability reflects the existence of paths between pairs of network actors (individuals or firms) which are not connected directly, where some network actors are completely isolated and reaching others may need long pathways (Aldrich, 1989). Under this condition, network actors can be ranked 'by how many intermediaries a path travels before one person is indirectly linked with another' (Dubini and Aldrich, 1991, p. 310). In enhancing network quality, more reachability is achieved when an entrepreneur can construct a path to others beyond his or her direct contacts (Hampton et al., 2011). The main content of the reachability network structure highlighted within the literature is in providing access to actors who possess professional advice and scarce resources (Hampton et al., 2011).

Ultimately, the entrepreneur's network has different structural characteristics, where each structure represents a key source of some entrepreneurial resources (Hoang and Antoncic, 2003). The network-based studies summarised these resources obtained by entrepreneurs through their network ties as: human capital in the form of knowledge and information (Söderqvist and Chetty, 2013; Sullivan and Ford, 2014; Semrau and

Werner, 2014; Johannisson, 1998; Coleman 1988); financial capital (Semrau and Werner, 2014; Hanlon and Saunders, 2007; Steier and Greenwood, 1999) establishing firm legitimacy (Batjargal, 2010; Moensted 2010, 2007) and building other networks (Söderqvist and Chetty, 2013; Semrau and Werner, 2014; Martinez and Aldrich, 2011). Under these conditions, networks ties offer a lot of benefits to the entrepreneur as they represent media for exchanging and creating bridges to other individuals and firms (Powell, 1990). Hence, in exploring the entrepreneur's network structural characteristics, it is crucial to understand 'How are some entrepreneurs able to obtain the resources they need for their ventures, while others struggle only to come up with little to show for their efforts?' (Ozdemir et al., 2014, p. 1).

Debate in earlier research seeks to develop a good understanding of how entrepreneurs might develop their network ties in a way that helps them to obtain and reach the required resources (Ozdemir et al., 2014; Martinez and Aldrich, 2011). For example, is a cohesive or diverse network structure more beneficial for the entrepreneur's venturing process? (Martinez and Aldrich, 2011). This can be argued to be related to: firms' development stages (Martinez and Aldrich, 2011; Hite and Hesterly, 2001 Rowley et al., 2000; McEvily and Zaheer, 1999); type of industry and institutional context of the country in which the entrepreneurs are embedded (Stam et al., 2014). Thus, the next sections will discuss first how the entrepreneur's network ties develop through the new firm creation and growth process, and then the entrepreneur's network ties in the technology industry since this research focuses on female-owned technology firms. A detailed discussion in terms of the social, economic and institutional environments of the research context will be provided in Chapter 4.

### **2.3.3 Entrepreneurs' network development**

The reliance of the entrepreneurs on their network ties, as sources for obtaining various resources, is not only related to the launch stage (Hoang and Antoncic, 2003). Entrepreneurs' network exchange ties are evolving over time, where they continuously maintain their network relationships through a process of exploring, screening and selecting dyadic ties (Larson and Starr, 1993). This process reflects a cycle of initiating

new ties, maintaining the existing ones and the dissolution of unnecessary or old ties (Rivera et al., 2010). The entrepreneurs need to be involved in a cycle of economic and social exchange in order to gain the necessary new ventures resources (Hansen, 1995).

Examining the dynamic entrepreneurial process must include description of the process of venture change (Slotte-Kock and Coviello, 2010; Jack et al., 2008). This description facilitates a definition of a theoretical context that is useful for framing studies that investigate the development of the entrepreneur's network (Jack et al., 2008). Thus, this section provides a discussion first of the entrepreneurial firm development process and secondly of the changes in the entrepreneur's network ties through the development process of the firm.

### **2.3.3.1 The entrepreneurial firm's development process**

A review of entrepreneurial network development studies by Slotte-Kock and Coviello (2010) indicates that the business life-cycle theory is the most common approach operationalised in order to contextualise network development process studies. Drawing on a longitudinal study that examined the process of entrepreneurial network development, Jack et al., (2008) found the firm's life-cycle model to be a good tool for explaining change in network relationships, practices and the key actions, interactions and processes at different times.

Building on the organisational life-cycle theory of organisational theorists the process of firms' development can be represented as a sequence of stages (Van de Ven and Poole, 1995). This sequence starts at the birth of the firm through maturity and growth to death (Jack et al., 2008). Each stage requires specific goals to be achieved and groups of activities to be performed that shape the extent and nature of the resource needs and acquisition challenges that impact directly on the entrepreneur's external contacts (Hite and Hesterly, 2001). Van de Ven and Poole (1995) indicated that the firm's progression requires a sequence of events, where the successful development in each of these events represents a piece of the final development of the firm. This, in

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turn, implies that each piece contributes to setting the stage for the next evolution phase of the firm (Van de Ven and Poole, 1995), for which the co-evolution of all of these pieces is key to the firm's survival (Burger-Helmchen, 2009). Therefore, after the firm's success in the start-up phase, several patterns of expansion stages will appear (Kazanjian and Drazin, 1990). Firms through the expansion stage will either continue growing and enter into the 'growth or roll-out stage' or some others fail to continue and exit (Ruhnka and Young, 1987, p. 176).

There is a distinct configuration of events and features at each stage that determines the boundaries of the business development stage (Ruhnka and Young, 1987). For example, for those studying the earlier stages, Reynolds and Miller (1992) proposed four key events that distinguish the new firm's gestation process: the founder's commitment and the initial hire, fund and sales. These events have been employed in several studies; for example in their stages model of high-technology venture founding, Hansen and Bird (1997) use the first hire and initial sales as markers to differentiate the end of the conception and product development stage and the start of the venture emergence stage or what is called venture launch stage. On the other hand, in a review for the stage models which described the high-technology development process, Hank et al., (1993) utilised the venture age, size, sales and employment growth rate and structural form to derive the growth stage taxonomy in the technology-based firms.

From the pre-start up stage through business establishment, some stage models of technology-based firm growth have focused on defining the firm's developmental stages (Hansen and Bird, 1997; Hank et al., 1994; Kazanjian and Drazin, 1990; Ruhnka and Young, 1987). To reach full understanding of the evolution process of technology-based entrepreneurial firms, these stage models have started to study the technology venture development process from the pre-start up stage or what is called conception and development stage (Kazanjian and Drazin, 1990) or seed stage (Ruhnka and Young, 1987) pre-founding (Söderqvist and Chetty, 2013), discovery stage (Marion et

al., 2015; Klyver and Terjesen, 2007) or entrepreneurial stage (Butler and Hansen, 1991).

The pre-start up stage of the venture can start before or after the business is legally created (Span and Adams, 1997). The stage models for technology-based firms found that the firm's strategic goal during this stage is about developing the business idea (Hanks et al., 1994). Most activities during the pre-start up stage are centered on technical issues that are mostly performed and directed by the founders (Kazanjian and Drazin, 1990). These activities, particularly in technology firms include: development of the product prototype (Ruhnka and Young, 1987); product design; concept development market investigation (Marion et al., 2015); and starting to think about and seek out financial, human, intellectual and physical resources (Kazanjian and Drazin, 1990). The firms prior to start-up are usually characterised by high informality, no formal structures and track record (Hank et al., 1994). The major challenges at this stage mainly include constructing the product prototype, promoting the business idea and finding initial funding (Ruhnka and Young, 1987).

Based on the entrepreneur's success in developing the initial new business idea, the new technology firms then will move to focus on developing and commercialising the products or services (Kazanjian and Drazin, 1990). This point in the business growth cycle reflects the start-up stage (Ruhnka and Young, 1987). New firm start-up is recognised when there is the appearance of economic activities, which reflect the existence of exchange relationships with the external environment (Reynolds and Miller, 1992). Building on Reynolds and Miller's (1992) work, the best indicators of start-up new business include the founder's commitment; making the first sales; securing the first financial support and hiring the first part-time or full-time employee. They found that the sequence of these indicators may vary in the order and time of occurrence, where the first indicator is the founder's commitment and the last indicator is often the first hire.

At the start-up stage, extensive scoping of resources, both from a human and financial capital perspective, is required to guarantee the firm's early-growth survival as they

encounter more complexity (Marion et al., 2015) and a high degree of environmental uncertainty generating several resource acquisition difficulties (Hite and Hesterly, 2001). The major challenges that the technology firms face at this stage are centered on making cost competitive technology products or services, developing a marketing plan and initial firm structure, attracting qualified employees and solving the initial manufacturing problems (Kazanjian and Drazin, 1990; Ruhnka and Young, 1987).

The stage of growth or expansion in new firms occurs as the firms prove their technical and manufacturing feasibility and establish market acceptance (Kazanjian and Drazin, 1990). The firm at this point with some established orders for sales, must enhance its manufacturing, marketing and distributing capacity to match greater future growth and attain the point of profitability (Kazanjian and Drazin, 1990; Ruhnka and Young, 1987). Thus, in this movement towards more growth, a broader scope of resources is required than previously in order to face many challenges including: establishing the market share; producing in volume with high efficiency and quality; and adapting to a high competitive market environment (Kazanjian and Drazin, 1990).

With the pressure of the competitive environment within high-technology, continuous growth and development is necessary to keep up market growth (Kazanjian and Drazin, 1990). At this point, Ruhnka and Young (1987) found that the firm enters a new stage described as the growth stage, maturity stage, later growth stage, bridge stage or pre-public stage. These terminologies reflect the different positions that the firms are in, in order to move into this new stage. Thus, some technology firms will continue to evolve strongly through the expansion stage to become a large organisation characterised by less entrepreneurial, low founder engagement, formal structure, specialised functions, experienced management team and more sales and employee growth (Hank et al., 1994; Ruhnka and Young, 1987). Other firms will continue in their development process to become more stable and mature, but in some cases, where the firms face real problems in securing the necessary growth in resources, these firms usually fail and then exit (Ruhnka and Young, 1987).

In sum, most stage models hypothesise that firms start out as entrepreneurial and then they evolve to become more administrated firms (Hank et al., 1994). Ruhnka and Young (1987) found that the first three stages, including the prior start-up, start-up and early-growth stage, appear to reflect the first generation of the firm's development process, where entrepreneurial processes are more likely to occur. They found that in the prior start-up and the start-up stage, the firm's focus is generally directed towards opportunity identification, developing the business idea, carrying out research, completing the technical development and market analysis and also introducing the product or service into the market.

Consequently, the focus of the firm moves towards developing market respect; making the sales in volume; and establishing the market share at the expansion or early-growth stage. Usually, these activities are performed and directed by the founder (Hansen and Bird, 1997; Hank et al., 1994; Kazanjian and Drazin, 1990; Ruhnka and Young, 1987). After the expansion stages and having started the growth or maturity stage, founder involvement in management issues will be reduced and transferred to the management team (Kazanjian and Drazin, 1990). Also, the focus of the ventures during the growth stage becomes more about developing clear strategic direction and professionalisation processes (Leung, 2003).

Within entrepreneurial network studies, researchers have investigated how the entrepreneur's network develops through different stages. Some studies focused on the early development stages including the emergence stage (venture launch) and early-growth stage, for example: Sullivan and Ford (2014), leung (2003) and Hite and Hesterly (2001). Other studies examined the entrepreneur's network development starting from the pre-start-up, start-up (emergence) into early-growth stage, for example: Söderqvist and Chetty (2013), Klyver and Terjesen (2007), Greve and Salaff (2003) Butler and Hansen (1991). Some other studies have investigated this process from the pre-start-up through to the establishment stage, for example, Hampton et al., (2011) and (2009).

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The time-line of the current research encompasses the network ties' development process of Jordanian female entrepreneurs in technology firms during two main stages of establishing the business: the start-up and early-growth stage. Based upon Reynolds and Miller's (1992) work, the start-up stage in this research reflects the period before making the first sales and hiring the first full-time employee and is based on which happened last. Entrepreneurs at this stage perform different activities including: opportunity identification, developing the business idea, preparing the market research, completing the technical development and market analysis and also introducing the product or service into the market (Hansen and Bird, 1997; Hank et al., 1994; Kazanjian and Drazin, 1990; Ruhnka and Young, 1987). On the other hand the early-growth stage in this research reflects the period after these indicators occur. Entrepreneurs' focus at this stage is on developing market respect, making the sales in volume and establishing the market share (Hansen and Bird, 1997; Hank et al., 1994; Kazanjian and Drazin, 1990; Ruhnka and Young, 1987).

The choice of these two early stages out of the business development stages turns on theoretical and practical reasons. Theoretically, these stages are perceived as the best period in the venture's development process to gain more detail about the entrepreneur's activities, since their involvement in performing and directing the venture's activities is very high (Hansen and Bird, 1997; Hank et al., 1994; Kazanjian and Drazin, 1990; Ruhnka and Young, 1987) . Thus, there is high use of his/her network to obtain and reach needed resources (Hite, 2005; Hite and Hesterly, 2001). Further, these early stages of business establishment are more likely to highlight the dynamic nature of the entrepreneurial network (Sullivan and Ford, 2014).

The need for a dynamic network is important from the early stages of the technology firm's creation and development, given that it requires more extensive and diverse resources (Hampton et al., 2009). Also, the entrepreneur at these stages faces several resources acquisition challenges, which are related to defining resource availability, acquiring access to strategic resources and dealing with uncertainty that creates access problems (Hite and Hesterly, 2001). Practically, the vast majority of the female



entrepreneurs' technology firms in Jordan are young and recently established. In addition, there is a time limitation since carrying out a longitudinal study over a number of years requires more time than is available for PhD study.

### **2.3.3.2 The entrepreneur's network development process**

Within the literature, there are three perspectives which describe the development process of the entrepreneur's network: the growth, strategic and structural perspectives (Siu and Bao, 2008). *The growth model* indicates that the entrepreneur's network ties evolve overtime to become more relationally embedded, which enables more opportunity for discovery and resource acquisition (Hite, 2005; Larson and Starr, 1993). Based on Larson and Starr's (1993) work, through the organisation development process, the network relationships follow three development stages. These stages explain how the entrepreneurial network relationships can be transformed from 'single-dimensional dyadic exchanges into a dense set of multidimensional' or 'socio-economic exchanges and then multi-layered exchange relationships' (Larson and Starr, 1993, p. 6).

*The strategic model* reflects that the network is managed as part of the firm's growth strategy (Siu and Bao, 2008), in which the network evolution is strongly related with the venture's competitive strategy (Lechner et al., 2006; Lechner and Dowling, 2003). According to this model, Lechner and Dowling (2003, p. 1) suggest that the entrepreneurial 'relational mix changes with the development of the firms' including: social networks, then as the firm grows reputational network, 'co-opetition networks', and then knowledge and innovation networks and marketing networks.

In describing the dynamic network process, the *structural model* develops arguments to portray the changes in the overall network patterns (Hoang and Antoncic, 2003). According to this model, the entrepreneurial network composition evolves continually to adapt to the venture's changing resources needs and acquisition challenges (Siu and Bao, 2008; Greve and Salaff, 2003; Hite and Hesterly, 2001). As such, the composition of the network ties that serve the firm at the emergence stage will not be appropriate

when the firm grows (Slotte-Kock and Coviello, 2010). In the entrepreneurial network literature, the development process of the entrepreneur's network structural characteristics has been examined through different stages of the business life cycle (Martinez and Aldrich, 2011). These stages mostly include: the prior start-up, start-up and early-growth stage.

At the prior start-up stage, which is also called the discovery stage (Klyver and Terjesen, 2007) or entrepreneurial stage (Butler and Hansen, 1991), the individual's network ties can help in increasing the motivation of starting a business as well as in discovering opportunities (Martinez and Aldrich, 2011). Together with an enterprising spirit, strong ties increase the individual's motivation and intention towards starting a business (Martinez and Aldrich, 2011; Sequeira et al., 2007). Martinez and Aldrich (2011) argue that strong cohesive ties, particularly within families, play a vital role in developing the entrepreneurial orientation and skills.

Strong social ties also play an important role in the opportunity identification process (Greve and Salaff, 2003). Studies found that the entrepreneurs with strong social ties tend to reproduce an existing business (Sequeira and Rasheed, 2006; Greve and Salaff, 2003). The strong ties at this stage enable entrepreneurs to determine 'the efficiency and accuracy of communication related to entrepreneurial opportunities' (Butler and Hansen, 1991, p 3). On the other hand, studies found that discovery of more innovative business ideas is more likely when the individuals have diverse ties at this stage (Martinez and Aldrich, 2011). Butler and Hansen (1991) argue that entrepreneurs with more numerous ties, at this point, are more likely to obtain new information.

For those who have studied the female entrepreneur's network, Hampton et al., (2009) indicated that the pre-start stage for female technology entrepreneurs relied on the contacts and ties comprising family, friends and acquaintances within the industry as a source of obtaining information help to validate their business idea.

During the start-up stage, which is also called the emergence stage (Hite and Hesterly, 2001), models of entrepreneurs' network development found that the strong ties, which

include family and friends, play an important role in obtaining new resources (Hanlon and Saunders, 2007; Jack et al., 2004; Greve and Salaff 2003; Hite and Hesterly, 2001). These ties, particularly at the start-up stage when entrepreneurs face high uncertainty, are more willing to provide different support (Semrau and Werner, 2014; Hite and Hesterly 2001) and at very low cost (Martinez and Aldrich, 2011). For example, informal investors including family and friends represent the main source for the start-up entrepreneurs in order to secure financial resources (Hanlon and Saunders, 2007; Elfring and Hulsink, 2003).

Within the literature there is a broad agreement that personal ties, family and friends, are a main source for start-up entrepreneurs to secure the resources (e.g., Hanlon and Saunders, 2007; Elfring and Hulsink, 2007; Greve and Salaff 2003; Hite and Hesterly 2001; Larson and Starr, 1993). At this business launch stage, entrepreneurs rely on their social strong ties for obtaining different support, financial resources, trusted information (Elfring and Hulsink, 2007; Greve and Salaff 2003; Hite and Hesterly 2001; Johannission 1987) and recruiting human resources (Leung, 2003). Also female entrepreneurs at the start-up stage relied on their personal network, particularly previous work friends to obtain advice and guidance (Hampton et al., 2011).

Recent studies, on the other hand, have indicated that institutional developments in many countries offer different new routes for start-up entrepreneurs to finance their ventures (Martinez and Aldrich, 2011). This development also offers the entrepreneurs more opportunities to gain access to people provide to advice and validation for the start-up entrepreneurs' business idea (Elfring and Hulsink, 2007). Despite this, personal ties still play an important role in securing the start-up resources for the entrepreneurs (Elfring and Hulsink, 2007). In seeking the new information and resources required during this stage, Butler and Hansen (1991, p. 4) argue that a 'hybrid network', comprising actors from entrepreneurs' pre-existing personal networks and new direct business ties with individuals and organisations, starts to emerge. This network enables start-up entrepreneurs to accomplish this stage's goals,

which include raising funds, completing the business model and finding suppliers (Butler and Hansen, 1991).

Also at the start-up or emergence stage entrepreneurs tend to have large numbers of network ties (Klyver and Terjesen, 2007; Greve and Salaff 2003). Entrepreneurs, at this stage, are less likely to know who can help them and thus, they are continually searching for people to assist in their start-up preparation and obtaining information (Elfring and Hulsink, 2007; Greve and Salaff, 2003). Therefore, the relationships with some of these ties deepen as the time passes; however, most of these ties end after a short period of time when the entrepreneurs ensure that these ties are not able to provide information (Elfring and Hulsink, 2007; Greve and Salaff, 2003). Thus, the personal strong ties are more optimal ties, which can be relied on at this stage to obtain more trusted insight into how to exploit their new opportunity (Elfring and Hulsink, 2007).

The high reliance on personal ties at the emergence stage combines with a high density of the entrepreneurial network (Hite and Hesterly, 2001). The closeness among the actors of the network increases the level of reachability (Wasserman and Faust, 1994), which enables information to be transferred among partners (Moran, 2005). At the emergence stage, since entrepreneurs face many resource acquisition difficulties, some argue that greater dependency on cohesive networks is advantageous (Hite and Hesterly, 2001).

Regarding the structural characteristics of the female entrepreneur's network, this stage is characterised by low diversity, reachability and centrality (Hampton et al., 2011). In addition, recent studies have indicated that there are no gender differences within entrepreneurial networks with regard to the network's density, size (Klyver et al., 2007; Cromie and Birley, 1992), exchange of emotional support (Klyver, 2011), strength of ties, reachability, diversity and centrality, particularly within technology entrepreneurs' networks (McGowan et al., 2013).

Using the strong personal relationships continues as entrepreneurs grow their business; however, more ties are needed, including business and market exchange relationships (Hite and Hesterly, 2001; Uzzi, 1996). These ties are important to access new opportunities and resources, support the entrepreneurial firm's growth (Uzzi, 1996) and are vital sources for finding management team members (Leung, 2003). These types of ties develop when the entrepreneurial firm achieves a better performance and certainty (Hite and Hesterly, 2001) and searches for distinctive competitive advantage (Uzzi, 1996).

The entrepreneur's network at the growth stage evolves into a more purposive network (Hite and Hesterly, 2001) which includes more work-based business ties (Siu and Bao, 2008). Under these circumstances, the network obtains more diversity through increasing business and market exchange contacts with other actors such as bankers, competitors, distributors, other firms and industry organisations (Martinez and Aldrich, 2011; Jack et al., 2004; Hill et al., 1999; Butler and Hansen, 1991). These exchange or inter-organisational ties are mostly weak ties (Martinez and Aldrich, 2011) but are important in accessing new information as the new firms grow (Sullivan and Ford, 2014; Elfring and Hulsink, 2007). Thus, at this stage, dense and strong network ties are not effective in securing additional resources and knowledge that the entrepreneurs need in order to grow, requiring the development of new ties (Hite and Hesterly, 2001). Weak ties, which are increased at the early-growth stage (Elfring and Hulsink, 2007; Greve and Salaff, 2003), are important in connecting new ties and bridging the holes in the entrepreneur's network structure (Granovetter, 1973).

Female entrepreneurial network studies have shown that the female entrepreneur's network diversity, reachability and centrality start to increase during this stage, and develop more quality in their network relationships as their business moves into the establishment stage (Hampton et al., 2011). In studying the gender differences in the entrepreneur's networks, Klyver and Terjesen (2007) found more male-dominated contacts at the later venture development stage in both the male and female entrepreneur's networks. However, as the firm grows to be more established, Hampton

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et al., (2011, 2009) found that the female entrepreneur's network tends to be a more mixed gendered network. Given the recent focus on the phenomenon of female entrepreneurial networking and network development, research in this field is still not well developed and lacks a deep understanding of the processes involved.

Ultimately, most of these models reflect the entrepreneur's network development process as a gradually evolving system and focus on the role of network relationships in discovering opportunities and acquiring resources. However, although these models are acknowledged to exist, the analytical focus of this research is on the structural characteristics of the network and the network development process. This process first turns to personal relationships, strong ties (e.g. Hanlon and Saunders, 2007; Jack et al., 2004; Starr and MacMillan, 1990), high social density (Hite and Hesterly, 2001) and low diversity (Hampton et al., 2011; Lechner and Dowling, 2003). The network develops new structural characteristics the business develops; including more diverse network ties (Hill et al., 1999) comprising more business ties that are based on professional rather than social exchange (Siu and Bao, 2008).

Within these models, the network's structural characteristics including size, diversity, density and strength of ties, are the most investigated within entrepreneurial network development studies. However, exploring centrality within the development process of entrepreneurs' networks, where entrepreneurs broker another two ties in their networks, and reachability, where entrepreneurs reach through third parties, have received less investigation. In addition, the process of how the content of these structural characteristics develops through time has been neglected. Although some studies have explained the content of some network structural characteristics, entrepreneurship studies do not offer a development perspective as to how the content of these structural characteristics changes from one stage to another. This research can be seen as an attempt to add to this agenda by identifying the type of content that entrepreneur's network structure yields through the firm's early development stages, as will be discussed in Chapter 8.

#### **2.3.4 Network ties and entrepreneurial technology firms**

The industry context in which the firms operate influences the appropriate network structural characteristics that would benefit the entrepreneurs (Stam et al., 2014). This current research focuses on the female entrepreneurial firms and in particular, technology-based firms. Much of the female entrepreneurial literature focuses upon their entrepreneurship in traditional sectors, such as services and retail, with little attention paid to female technology entrepreneurial firms (Cooper et al., 2011; Hampton et al., 2011, 2009; McGowan et al., 2013; Mayer, 2006), specifically in the Middle East. Accordingly, examination of female entrepreneurship in this sector contributes to an exploration of the nature of female entrepreneurship in new fields (Cooper et al., 2011) as well as making a valuable contribution to the body of research on female entrepreneurship, especially in the Middle East (Brush and Cooper, 2012).

The rate of establishing new technology-based firms is widely accepted as an important indicator of economic growth (Robb and Coleman, 2010; Cooper and Park, 2008; Almus and Nerlinger, 1999). They act as a vital source for promoting business environment development, new employment opportunities and technological change in any region (Robb and Coleman, 2010; Almus and Nerlinger, 1999). However, building successful technology-based firms has been seen as a complex process, where many of the studies concluded that there is a high failure rate among such firms, particularly in the emergence stages (Burger-Helmchen, 2009). Thus, in establishing an entrepreneurial technology-based firm, an entrepreneur needs to consider many factors affecting his/her entrepreneurial entry and growth process (Cooper et al., 2011).

Several features relating to the nature of the technology sector can be identified as a main factor impacting on the formation process of such firms (Moensted, 2010, 2007). Technology entrepreneurs are often working within a complex operating environment that requires numerous specialised resources, particularly so for product-based firms (Cooper, 2000). In that regard, a myriad of tangible and intangible resources from a wide range of resource providers become important for establishing a new technology-based venture (McGowan et al., 2013). Many studies have indicated that the

technology-based firm, especially those that are product-based, are recognised as capital intensive ventures requiring substantial amounts of investment from several formal and informal financial sources (Robb and Coleman, 2010; Mayer, 2006; Elfring and Hulsink, 2003; Almus and Nerlinger, 1999). This is especially associated with technology-based firms, given that the need for funding usually occurs early and before the products become ready for the market (Spann and Adams, 1999).

On the other hand, many of the intangible resources have an effective role in building successful technology firms in both services and product-based firms (Narvekar and Jain, 2006; Elfring and Hulsink, 2003). These resources include information about technical knowledge, advice, expertise, (Kanter, 1984), production know-how (Elfring and Hulsink, 2003) opportunities and technology and market development (Narvekar and Jain, 2006). These types of resources also appear in the form of technological entrepreneurs' capabilities, where entrepreneurs need to be innovative in creating technological products or services, as well as entrepreneurial in elaborating a new business model, marketing and organisational activities (Burger-Helmchen, 2009). In this situation, these ventures are strongly influenced by their founders' technical and business competences (Cooper et al., 2011; Granstrand, 1998) as well as other organisational members' competences, attitudes and intellectual abilities (Narvkar and Jain, 2006).

Also, technology-based ventures are known for their dynamic nature and thus many shifts and changes will occur in the business and required resources (Granstrand, 1998). On the other hand, researchers have demonstrated the differences between the characteristics and requirements of technology-based firms in the process of obtaining socio-political legitimacy; for example, biotechnology firms place greater importance on cognitive legitimacy than do software firms (Elfring and Hulsink, 2003). Another example is related to the software firms' high start-up growth (Lechner and Dowling, 2003); while these firms' start-up may take several months, start-ups making biotechnology products ready for the market require several years (Cooper et al., 2011).



Other researchers indicate that the new technology-based ventures are also characterised by a high level of technology and market uncertainty associated with the innovative nature of the environment and changing opportunities under conditions of risk (Moensted, 2007). Entrepreneurial technology-based ventures are mainly established to exploit and develop new technological business ideas (Autio, 1997). The major risks that relate to these ventures' new ideas include the high level of technological advancement and thereby high market shifts. Consequently, any delay in the development of these ideas may make them obsolete (Ruhnka and Young, 1987). Thus, uncertainty is an embedded characteristic of the new entrepreneurial technology-based firms (Moensted, 2010, 2007). Under these conditions of uncertainty, there are many difficulties in obtaining legitimacy for business ideas (Spann and Adams, 1999), where obtaining this legitimacy represents a fundamental issue at the outset of introducing the new ideas (Elfring and Hulsink, 2003).

Other studies focus on the interdependence among the technology-based firms as one of the main features affecting these firms' development (Bailetti, 2012; Moensted, 2010, 2007). This feature refers to the high degree of interdependency between these firms and new technological development in the other firms (Bailetti, 2012; Moensted, 2007). For example, the process of developing many of the new drug products depends on the level of collaboration between biotechnology and pharmaceutical firms, where the latter are dependent on the development of the drug research achieved by biotechnology firms (Chang, 2004). Indeed, many firms such as food-additive and cosmetics ones depend on the development of biotechnology firms' research; in contrast, many of the biotechnology firms depend on universities' research (Moensted, 2010).

Thus, technology-based firms are characterised by their requirement for a myriad of tangible and intangible resources (McGowan et al., 2013), interdependence (Bailetti, 2012; Moensted, 2010, 2007), uncertainty (Moensted, 2007) and their dynamic nature (Granstrand, 1998). The findings of those who have studied entrepreneurial technology-based firms, indicate that technology entrepreneurs can use the help and

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resources of others through network ties to deal with these emergence and growth requirements and difficulties (Moensted, 2007, 2010). Networking has been introduced as an effective entrepreneurial activity to reach and obtain the ventures' resources and legitimacy, to identify new opportunities and to reduce uncertainty (Robb and Coleman, 2010; Moensted, 2010, 2007; Narvkar and Jain, 2006; Elfring and Hulsink, 2003; Almus and Nerlinger, 1999; Granstrand, 1998; Spann and Adams, 1997). Thus, entrepreneurial networks appear to be a vital element in the success and entry growth of technological firms (Elfring and Hulsink, 2003). In addition, the nature and quality of the resources and information that the technological entrepreneur acquires, largely depend on the nature of his/her entrepreneurial network and networking behaviours (McGowan et al., 2013).

The literature highlights the importance of entrepreneurs' networks in acquiring new technology-based tangible and intangible requisite resources that can support entrepreneurial capabilities (Narvekar and Jain, 2006; Elfring and Hulsink, 2003). In addition, studies show the important role for the networks of technology entrepreneurs of the informal financial resource providers, such as business angels, family and friends in order to secure the start-up funds, as well as the formal financial resources such as from venture capitalists to secure growth funds (Elfring and Hulsink, 2003). Also the networks of technological entrepreneurs play a crucial role in exploiting existing opportunities, identifying new opportunities (Moensted, 2010) and accessing knowledge about suppliers, customers, investors and technical skills (Cooper and Park, 2008).

In establishing the new technology ventures' legitimacy under conditions of high uncertainty, the validation of decision making by these relationships represents an effective tool for technology entrepreneurs (Hampton et al., 2009; Moensted, 2007). These relationships provide many guidelines for reducing uncertain conditions (Moensted 2007) as well as enabling the creation, validation and confirmation of the new business idea (Hampton et al., 2009). Furthermore, in many cases the network relationships that build reputation and trust such as research collaboration, help new

biotechnology firms gain access to new technological development, professional advice and production facilities (Moensted 2010). Therefore, the above evidence suggests that building network ties is a vital way to adapt and deal with the volatile nature of the entrepreneurial technology firms and support their survival and growth (Moensted 2007; Elfring and Hulsink 2003).

## **2.4 Summary**

In summary, networks of the female entrepreneurs become a vital component for resource acquisition, assisting female entrepreneurial technology-based firms to successfully emerge and grow. This review of the literature has introduced the groundwork for understanding female entrepreneurship, entrepreneurial networks and networks of entrepreneurial technology-based firms, on the basis of which female entrepreneurial network development in technology-based firms can be explored. The main argument is that the entrepreneurial networks change as the firm is created (Larson and Starr, 1993). Thus, the addition of new ties will modify any prior networks and hence affect the development of future relationships (Gulati et al., 2002). In addition, the more developed the network is in terms of relationship quality, the more benefits are likely to be engendered, which then help facilitate successful establishment of the firm (Hampton et al., 2011).

The role of the network in the venture's formation process is explained through the quality of the network's structural system and its content, which reflect the strength of the focal actor's position and the nature of the resources that will be available through the network (Gulati et al., 2002). Therefore, the network structure that evolves from crosscutting ties and the content of these ties act as key elements in any analysis of network ties (Hoang and Antoncic, 2003; Borgatti and Foster, 2003). Taking these interrelated parameters together helps provide an in-depth understanding of the entrepreneurial network (Slotte-Kock and Coviello, 2010), given that they explain who the entrepreneur reaches and how they are reached (structure), and what they reach (content) (Burt, 1992). Therefore, the general argument of this study is that the structural characteristics of female entrepreneurial networks and their contents develop

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through time to acquire the required resources, thus facilitating female entrepreneurial technology-based firms to emerge and grow successfully.

## **Chapter 3: Research methodology and design**

### **3.1 Introduction**

This study of female entrepreneurial networks developed and utilised for firm creation and development, uses a qualitative research approach and exploratory in-depth interviews to address the study questions (Hoang and Antoncic, 2003). This chapter is to explain and justify the theoretical orientation and design of the research approach and method. Thus, it provides a description of the study design, method and analysis approach and discussion of the potential limitations associated with the research method in general and in this study in particular.

### **3.2 Research objective**

The purpose of this research is to add to the still growing body of knowledge of female entrepreneurship theory and theory related to female entrepreneurial networks, with a specific focus on the dynamic process of the female entrepreneur's network in technology-based firms in Jordan as a case study of Middle Eastern societies. This objective is achieved by answering the following two main research questions:

- How does the Jordanian female entrepreneur's network structure develop to facilitate the start-up and early-growth of their technology-based firm?
- How does the content of the Jordanian female entrepreneur's network structure develop to facilitate the start-up and early-growth of their new technology-based firm?

### **3.3 Research methodology**

#### **3.3.1 Research philosophy: Interpretivist paradigm**

Ways of studying human behaviour in social exchange network ties depend heavily on the paradigmatic assumptions adopted by the researcher (Johannisson, 1987). The interpretivist approach is often employed by researchers to understand the nature of the social world (Burrell and Morgan, 1979). Ontologically, interpretivists see 'the

nature of reality as socially constructed, subjective and may change' (Saunders et al., 2009, p. 119). Thus, this paradigm argues that the 'meanings used in social theories must be derived from social actors' concepts and meanings' (Blaikie, 2009, p. 99). The epistemological stance in this paradigm focuses on 'the details of situation, a reality behind these details and the subjective meanings motivating actions' (Saunders et al., 2009, p. 119). According to the interpretivist paradigm, people's experience is the basic source of knowledge (Weber, 2004).

In entrepreneurs' networks, the ontological assumption perceives the reality as socially constructed, where individuals are expected to be able and willing to act in exchange relationships (Johannisson, 1995). In this context, entrepreneurs' networks are defined as a consequence of the entrepreneurs socially constructing them (Johannisson, 1987). The term 'networking' is used to define the behaviour of the entrepreneurs in their interactions with the other actors (Dubini and Aldrich, 1991; Ostgaard and Birley, 1996). This reflects that a set of interactions can be observed and documented among the network actors.

Therefore, the entrepreneur's network, configured by a group of ties among the network's actors, (Uizz, 1996; Powell 1990) is a social formation of an entrepreneur's interactions and the 'reality is objectified by social interactions' (Johannisson, 1987, p. 10). Building upon this, analysis of an entrepreneur's network is related to the interpretivism approach, where unlike the objectivist view, the subjectivist view provides an enriched understanding of the nature of interactions between network actors (Johannisson, 1995).

The interpretivism paradigm view holds that discovering the individual's behaviour cannot be accurate without studying their interests, values, purpose and ways of acting (Kenneth, 1988). In the investigation to discover how individuals act, methodologies may provide a better level of situational detail from the empirical world, and take meaning from the words of respondents in ways that the positivist approach would not (Blaikie, 2009; Weber, 2004; Kenneth, 1988).

In analysing the networking activities, interpretivism allows the researcher to gain an in-depth understanding of the individual's behaviour (Johannisson, 1995). Thus, the entrepreneur's perception of their network relationships is an important part in studying these relationships. The qualitative techniques that support the interpretivism paradigm (Kenneth, 1988) are considered to allow researchers to understand better the development process of entrepreneurs' relationships than would be possible through a quantitative approach (Jack, 2010; Hoang and Antoncic, 2003). In-depth interviews is one of the qualitative data collection and analysis methods that are used to generate meaning from natural settings (Mason, 2002). Given these perspectives, the in-depth interviews allow for the attainment of rich detail and analyses from natural research settings (Kvale, 2006; Holstein and Gubrium, 2004; Mason, 2002).

### **3.3.2 Research approach**

Research in the field of entrepreneurship needs approaches which support discovery and theory building (Hampton et al., 2011). For theory building in entrepreneurship, using the qualitative method is appropriate (Hoang and Antoncic, 2003) and studying the entrepreneurs' narratives provides as a rich sources of data (Larty and Hamilton, 2011). The network-based literature argues that the qualitative approach is more suitable for providing a richer understanding of entrepreneurs' network-based research (Jack, 2010). In addition, qualitative approaches have been considered to be more effective for studies exploring the entrepreneur's network development process (Hoang and Antoncic, 2003; Lechner and Dowling, 2003). Thus, the current research adopted a qualitative approach to explore the development process of the female entrepreneur's network in Jordan and used an interview method for data collection.

Within the qualitative methodology, the interview is considered as an appropriate method for the social context, given that it increases the researcher's ability to extract knowledge about people's personal experiences (Axinn and Pearce, 2006; Holstein and Gubrium 2004). Interviews have been widely used for exploratory studies, which help to access explanations for how people think and behave within the world in which they live (Murphy et al., 1998). The literature argues that the method that provides the

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richest understanding and analysis of a subject, is the in-depth interview. The in-depth interview is defined as a 'discovery-oriented method, which allows the interviewer to deeply explore the respondent's feeling and perspective on a subject' (Guion et al., 2011, p. 1). For these reasons, the in-depth interview was selected as an appropriate method for this study. The key feature of the in-depth interview method is a semi-structured format (Guion et al., 2011).

A semi-structured, in-depth interview is 'generally organised around a set of predetermined open-ended questions, with other questions emerging from the dialogue between interviewer and interviewee(s)' (DiCicco-Bloom and Crabtree, 2006, p. 315). This interviewing format is the most widely used format for qualitative studies (DiCicco-Bloom and Crabtree, 2006) and combines a degree of structure and flexibility (Legard et al., 2003). Studies argue that 'unstructured interview' is a misleading term as it impossible to collect data completely without structure (Mason, 2002). On the other hand, and in order to draw a distinction, the structured interview has standardised questions, which are used for the purpose of producing quantitative data (Axinn and Pearce, 2006).

Researchers consider the semi-structured interview to be an alternative that implies more flexibility and a lesser degree of standard interview questions (Mason, 2002; Robson, 1993). This flexibility allows 'the respondent to change the course of the conversation and bring up new issues that the researcher had not preconceived' (Axinn and Pearce, 2006, p. 6). It also represents an effective method for obtaining insight into the participant's ways of interpreting the world (Milena et al., 2008). As a result, this flexibility promotes deep insights into the research area which facilitate the generation of new theoretical directions (Axinn and Pearce, 2006).

The semi-structured, in-depth interviews offer an advantage to studies seeking in-depth analysis as they provide the necessary flexibility through using open-ended questions that evolve according to the interview conversation (Rubin and Rubin, 1995; Robson, 1993). The process for conducting an in-depth interview also allows the development of a plan that helps to define the sources of information, participants and



adherence to research ethical standards, as well as instruments helping to draw guidelines for conducting the interviews (Boyce and Neale, 2006). This helps prevent the research from deviating beyond the initial research design. The in-depth interview, thus, is employed in this study as an appropriate method for exploring and understanding how the network relationships evolve within the female entrepreneurial network.

### **3.3.2.1 Rationale for in-depth interview method**

The in-depth interview method is widely advocated in entrepreneurship (Jack, 2010; Slotte-Kock and Coviello, 2010; Hoang and Antoncic, 2003) especially in female entrepreneurship studies (Stevenson, 1990). In entrepreneurial networks studies, for example, McGowan et al. (2013), Hampton et al. (2011), Hill et al. (1999), Hansen (1995), Currant et al. (1993), Larson (1991), Butler and Hansen (1991), employed in-depth interviews as an appropriate method for exploring the perception of the entrepreneurs with regard to their network relationships.

The in-depth interview also has been recognised as the preferred research method when the research purpose explores the dynamic process and structural content of the entrepreneur's network (Hampton et al., 2009; Jack et al., 2008). The qualitative interview is adopted when the research purpose is exploratory rather than descriptive (Blaikie, 2009; Mason, 2002). Thus, given that the purpose of this research is an exploration of the pattern and content of the development process of female entrepreneurs' networks, the in-depth interview method represented a good fit.

In addition, this kind of interview method is very appropriate for 'how' research questions and those questions addressing processes (Blaikie, 2009). Also, the in-depth interview is defined as 'a technique designed to elicit a vivid picture of the participant's perspective' (Milena et al., 2008, p. 1279), which enables the research to elicit detailed information and insights into the research area (Boyce and Neale, 2006). In addition, the process of data collection and analysis of the in-depth interview opens up possibilities of identifying new theoretical directions.

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The in-depth interview is also a suitable qualitative method in the early stage of research, when researchers seek to explore new issues in-depth (Boyce and Neale, 2006). The literature on female entrepreneurship represents less than 10 per cent of the wider entrepreneurship research (Brush and Cooper, 2012), with only a small number of studies on female entrepreneurs' networks (Hampton et al., 2011). Also, this modest amount of research has been conducted in Western contexts, with an absence of such studies from Eastern contexts. The current research focus, which aims to enhance understanding of the female entrepreneur's network structure and content through the technology firm creation and development process in the Jordanian social context, has not been explored in previous research. The generation of existing literature and empirical research on the development process of the female entrepreneur's network, in general, and in the Eastern societies specifically, is still in the early stages.

On the other hand, the in-depth interview method is not without criticism (Saunders et al., 2009; Boyce and Neale, 2006). In general, these critiques include a number of issues related to reliability, validity and generalisability (Golafshani, 2003; Seale, 1999). Qualitative researchers argue that these issues are inappropriate for qualitative research as they are influenced by the way of evaluating the quantitative paradigm (Golafshani, 2003; Stenbacka, 2001).

For example, some concerns have been expressed about qualitative methods' lack of reliability, due to the lack of standardisation (Saunders et al., 2009). However, this research focus is on exploring process in order to obtain deeper theoretical understanding of the female entrepreneur's network evolution in an Eastern context. For such types of study 'the value of using non-standardised interviews is derived from the flexibility that you may use to explore the complexity of the topic' (Saunders et al., 2009, p. 328). Thus, as this study has a 'purpose of generating understanding' rather than 'a purpose of explaining' (Stenbacka, 2001, p. 551), 'an attempt to ensure that qualitative, non-standardised research could be replicated by other researchers would not be realistic or feasible without undermining the strength of this type of topic' (Saunders et al., 2009, p. 328).

Another criticism is related to the lack of validity of research findings (Seale 1999); however, the level of validity is increased when these interviews are conducted carefully (Saunders et al., 2009). The careful conduct of interview is dependent on the extent of the capacity of the questions in the research interview to clarify and explore the participants' meaning and to cover different angles (Saunders et al., 2009). In addition, Stenbacka (2001, p. 551) argues that the validity of the qualitative research is achieved if the participant 'is given the opportunity to speak freely according to his/her own knowledge structure'. Thus, many steps have been taken in this current research to conduct interviews carefully, ensuring the voluntary participation of interviewees and the confidentiality of data. These steps including the pilot interviews, seeking to ensure that the interviewer's questions enable data to emerge that helps to meet the research objective (see Section 3.6.1); the interview protocol also includes some steps for managing the process of conducting the research interview (see Section 3.4.3).

Another contentious issue is that generalisation cannot be built on the basis of in-depth interviews (Blaikie, 2009). This critique is accurate for generalisations being made for a population in theory testing (Saunders et al., 2009). In other words, generalisability from qualitative methods is made possible but not on the basis of statistical grounds (Stenbacka, 2001). Yin (2003) found that generalisations relating to qualitative research are analytical rather than statistical generalisations. This concept means that generalisation is made for theoretical propositions (Saunders et al., 2009). Consequently, strengthening qualitative research generalisability is made possible through strategic choice of the research participants (Stenbacka, 2001). Thus, the data for this research are generated through using multiple cases which are selected and based on a set of elements (see Section 4.3.2). These elements that have importance at the theoretical and practical level, allow for control within the research design.

Taking the above discussion into account, an exploratory study was undertaken, which generated understanding of the development process of female entrepreneurial

networks. In addition, many steps were taken to address any research method issues and to strengthen the study findings.

### **3.4 Research design**

Given that a qualitative approach was to be adopted, this research used an in-depth interview method to address the research questions. The design of the in-depth interview method is described in the next section which explains how the research data were collected and applied in order to answer the research questions (Guion et al., 2011).

#### **3.4.1 Research interview design**

This section illustrates which sectors were studied; how many interviews were conducted; and how the participants were selected.

##### **3.4.1.1 The interview sector: technology-based firms**

This research is set within the context of technology-based firms. In this context, studies have adopted two main approaches to define technology firms, including the business characteristics approach and the industrial classification approach (Mason and Brown, 2012). (See Appendix (A) for more description of these approaches). Using the industry definition, the definition of technology firms, which is adopted in this study, includes both technology manufacturing and service activities. Technology manufacturing activities include energy, life science, medical equipment electronic publishing and computer equipment. Technology service activities include software development and consultancy, digital content, mobile application, web/internet service, architectural design, engineering activities and technical consultancy, technical analysis and Scientific R&D services. This definition is adopted from Glasson et al. (2006) and the North America Industry Classification System (NAICS) (Hecker, 2005).

The motivation for selecting the technology firms<sup>3</sup> in this research was three-fold:

**First**, this research focuses on female entrepreneurial firms in their early development stages. In the last decade, notable improvements have been seen in Jordan's technology sector, with many reforms taking place to improve the physical and intellectual infrastructure of this sector (Majcher-Teleon and Slimene, 2009). Thus, many opportunities are emerging, especially, in the ICT sector, due to several factors such as the liberalisation of telecommunications, increasing infrastructure accessibility, increases in government support and the creation of a good regulatory ICT framework (Al Jidara, 2007). The country has also made many regulatory reforms facilitating business registration and reducing costs for entrepreneurs (World Bank, 2013). These developments have helped make the country one of the more desirable places to launch technology start-ups in the region<sup>4</sup>. Recent figures indicated that Jordan's technology sector represents 50 per cent of the country's new firms (Intaj, 2013), as well as representing a haven for the region's entrepreneurs due to its entrepreneurial ecosystem development (FYGL and BC, 2011).

The level of female technology entrepreneurial activities in Jordan is still under-represented. Nonetheless, new female-owned entrepreneurial technology firms were expected to start in this sector resulting in development of this sector. Figures from some technology business associations and accelerators give an indicator that female entrepreneurs' participation in the technology sector has begun to increase. For example, in Jordan, Oasis500's figures, the first technology start-up accelerator and seed Investment Company of its type in the region, indicate that 35% of their companies in 2012 were founded/co-founded by women (Katkhuda, 2012). Also, it is

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<sup>3</sup> In this research the term of technology firm is used to refer to the technology-based firm.

<sup>4</sup> Considering criteria such as the legal environment, availability of infrastructure and entrepreneurship spirit and talent, Jordan's capital Amman has ranked recently as one of the top world cities for launching tech start-ups. This ranking was developed by the founder of a venture capital firm, Rachid Sefrioui and his team (<http://rachid-sefrioui-venture-capital.blogspot.co.uk/2012/01/top-10-cities-to-launch-tech-startup.html>).

anticipated that this number will increase in the next few years (Katkhuda, 2012). Thus, the recent developments in Jordan's technology sector indicate that the sector is a rich environment for the emergence of such firms and a potential new area for female entrepreneurs. Building upon this, the likelihood of finding female entrepreneurial firms in their early stages of development was good in Jordan's technology sector.

**Second**, technology firms are known for their highly dynamic nature (Moensted, 2010) and high need for extensive tangible and intangible resources, particularly in the early development stages (Narvekar and Jain, 2006; Elfring and Hulsink, 2003). Under these conditions, there is a high probability that entrepreneurs will engage in networking activities and use network ties to reach and obtain resources (Sullivan and Ford, 2014; Moensted, 2010; Elfring and Hulsink, 2003), where the entrepreneur is at the core of his or her own firm (Johannisson, 1998). Therefore, these firms provide a good opportunity for exploring networking activities and the development of network ties.

**Third**, this study seeks to understand the dynamics of the female entrepreneur's network and its role in the formation process in a sector which has traditionally been regarded as a male-dominated one (Hampton et al., 2011). Thus, this sector will be an interesting example for reflecting on the experience of female technology entrepreneurs in Middle Eastern societies, where the number of women in technology sectors, events and gatherings is still limited.

#### **3.4.1.2 Number of interviews**

In qualitative research, studies have indicated that there is no universal standard for the number of the research interviews (Dworkin, 2012; Blaikie, 2009). As qualitative researchers are often concerned with producing deep meaning, analysis and interpretation, a considerable period of time should be spent with each participant (Blaikie, 2009). For this reason, a smaller number of interviews tends to be adequate (Dworkin, 2012). Notwithstanding this, qualitative research scholars suggest that from five to 50 in-depth interviews with participants are sufficient to answer research questions (Dworkin, 2012).

Given that each participant adds value to the study (Yin, 2003), an attempt was made to increase the number of participants in the research. However, the level of female entrepreneurs' participation in Jordan's economic life is still relatively low and concentrated in traditional economic activities, such as services and the retail sectors (MPIC and UNDP 2011). Thus, the decision relating to the target number of the interviews, was constrained by the number of female entrepreneurs who owned technology-based firms in the early development stages and met the research criteria (see Section 3.5.3). As a result, the research sample design was flexible to allow interviews to be conducted until the two-stage interviews had been conducted with the female founders of the 14 selected firms (Dworkin, 2012; Blaikie, 2009).

#### **3.4.1.3 Research sample**

The technique for selecting the research sample was informed by the research questions, where an information-rich sample was needed to explore these questions and obtain theoretical insights (Saunders et al., 2009). Purposive sampling of cases is the most productive for obtaining deep information to answer the research questions (Marshall, 1996). These cases are selected on the basis of different variables, which are considered theoretically and practically important to the research (Marshall, 1996). As stated by Patton and Patton, (2002, p. 230) the 'logic and power of purposeful sampling lies in selecting information-rich cases for study in depth'. 'Information-rich' narratives are also defined according to Patton and Patton (2002, p. 230) as those cases 'from which you can learn a great deal about issues of central importance to the purpose of the inquiry'.

Research purposive cases may be designed to be homogenous where the focus is on a specific group of participants (Saunders et al., 2009). On the other hand, heterogeneous cases may be appropriate to enable the collecting of data that explore central themes from different sub-groups (Saunders et al., 2009; Patton and Patton, 2002). Although the diversity in a small sample might be a problem, Patton and Patton (2002, p. 235) argue that this is a point of strength in purposive sampling as 'the data collection and analysis will yield two kinds of findings: first, high-quality, detailed descriptions of

each case, which are useful for documenting uniqueness. Second, important shared patterns that cut cross cases and derive their significance from having emerged out of heterogeneity’.

Purposive sampling, however, contrasts with probability sampling techniques. For non-probability sampling techniques, the external validity and generalisability of findings from the sample to the population is high (Saunders et al., 2009). While purposive sampling might not achieve statistical representativeness, the logic of such an intellectual sampling strategy (Marshall, 1996) is to achieve an exploratory answer to the research questions based on analytical rather than statistical grounds (Saunders et al., 2009) and was, therefore, suitable for this exploratory research. For this research, purposive sampling was developed to include cases with female entrepreneurs who create, own and operate new technology firms in Jordan. These cases represented a range of technology industries including digital media and mobile application, software, animation, ICT consultancy, web/internet services and hardware equipment.

#### **3.4.1.4 Interview sample criteria**

The female-owned entrepreneurial firms chosen for interview were initially selected on the basis of criteria related to firm creation, ownership and management, technology industry and firm development stages. The first criterion was the entrepreneurial dimension including the firm’s creation, management and ownership. The interviews were designed to include firms created by female entrepreneurs (i.e. they did not inherit or purchase them) as well as them being involved in the firm’s day-to-day management activities. In addition, female entrepreneurs had to own 50 per cent or more of the firm’s equity. All the female entrepreneurs who participated in this study



had created, were involved in the management of the firms and owned 50 percent or more of their firm at their business start-up or early-growth stage<sup>5</sup>.

The second criterion was the firm's development stage. The age of the firm does not necessarily reflect the stage of development (i.e. start-up stage or early-growth). Therefore, this research used the time of first commercial sales and (or) the time of first hire (Reynolds and Miller, 1992) to differentiate the end point of the firm's start-up stage and start of the firm's early-growth stage. These markers are considered to be a good fit with technology-based firms, which are known for their dynamic nature (Granstrand, 1998). The length of the development cycle varies between product and service technology firms; for example, a software firm's start-up may take several months, whilst starting and making biotechnology products ready for the market require many several years (Cooper et al., 2011). Thus, the first hire of full-time and (or) first commercial sales are considered to define the potential sample. Most of the firms chosen for the research interview met both markers; however, two cases met one marker. These two participants had not achieved their first commercial sales during the interview period; however, one of them reached her first commercial sales two months after the time of the research interview.

The third criterion for research sampling was the sector; in this research the decision was taken to analyse women's experience in different types of technology firms. An attempt was made to include high-technology industries such as biotechnology, life science and computer equipment, but no female-owned firms were found in such industries. Also, two firms were found in the energy sector, but one of them did not meet the firm development stage criterion and the other was unwilling to participate in the research. Thus, this research studied female entrepreneurs in the following

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<sup>5</sup> The ownership of three participants had decreased to fifty per cent or less at early-growth stage and only one of the participant's ownership increased after the business started. The other participants' ownership was more than fifty per cent since the start-up stage.

industries: software development, digital content and mobile application, web/internet service, animation, engineering activities and related technical consultancy, ICT consultancy, pharmaceutical research and development and electronic devices.

#### **3.4.1.5 Sample identification**

Founders of 14 technology-based firms were identified to participate in this study, based on meeting the research eligibility criteria and the participants' willingness and accessibility during the data collection stage. A list which included 52 firms was developed which provided a potential sample during the data collection phase (May – August 2013).

A list of women-owned businesses and an accurate database to help find those women is not available in Jordan. In order to identify potential new technology-based firms, during the period between December 2011 and April 2013, an attempt was made to identify them through different avenues. These avenues included government organisations, technology associations, technology business accelerators and investment companies, some technology entrepreneurs within the Jordanian market, businesswomen associations and enterprise development organisations.

The first stage of contacts was made with some governmental bodies, the Ministry of Industry and Trade, Chambers of Commerce and Chambers of Industry in Jordan, during the period between December 2011 and March 2012. Three main issues were noticed in the lists that are available for these governmental bodies. First, most lists in these organisations are grouped into categories which result in the technology firms being scattered across different industry categories. For example, a firm in web/internet services would be coded in the service industry along with non-technology firms. Thus, it was difficult to get an indication of the technology firms as distinct from non-technology firms.

Second, the lists that are available in the Chambers of Commerce and Industry include women who own and manage their businesses, women who have stocks in firms and do not manage them and those who are registered in these organisations but the owners

are someone else in their families. In addition, the database in the Ministry of Industry and Trade is divided into: a) Individual companies: this database does not include information about the number of females as the classifications are according to the type of company (industrial, trade, agriculture, construction and service) and not according to the gender of ownership. b) Shareholder companies: this database shows that women have a share in 48,189 companies; however, information about whether or not they have any managerial responsibilities and the type of firms is not available.

Therefore, using these lists to obtain a clear indication of the technology firms owned by female entrepreneurs was difficult. In addition, contacting those women who appeared in the database in these lists was difficult due to the large numbers of those women and unavailability of up-to-date information on their addresses (e.g. telephone or email). The governmental information was not ideal for building a list of female entrepreneurs who own technology firms and could not be relied upon to help define the potential research sample.

Thus, personal contacts in different avenues were used in this study as the main source from which to build and identify the potential sample. To build a representative potential sample and avoid accessing data from one single avenue, the second stage of contacts were made with many different avenues during the period between April 2012 and April 2013. These contacts were included:

- 1) Technology associations: Endeavor and Intaj (Information and Communication Technology Association of Jordan),
- 2) Technology business accelerator and investment companies: Oasis500 and National Net Ventures (N2V), technology business incubators: Queen Rania Center for Entrepreneurship (QRCE), iPark and Al Urdoniah for Innovation,
- 3) Businesswomen associations: The Jordan Forum for Business and Professional Women (JFBPW) and Murshdat and the Jordanian Enterprise Development Corporation (JEDCO).

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Also, given that some business incubators and accelerators play a role in developing the network relationships of entrepreneurs, an attempt was made to obtain a good number of potential participants who had not been involved in a business incubator or accelerator. These contacts were made through some technology entrepreneurs and CEOs in Jordan's technology sector.

In total these contacts produced a list which included the names of 119 firms (see Table 3.1)<sup>6</sup>. However, the names of 12 female entrepreneurial firms were received twice and three other names were received three times from different avenues. After excluding the repeated names, the list included 86 firms. In addition, an initial visual screening, internet searching of these companies' websites and contact with the list providers indicated that 34 firms were non-technology firms and some of them did not meet the research definition of technology firms<sup>7</sup>. Thus, the final list after excluding the non-technology firms, included 52 firms as potential participants in the research. The next section will describe how the potential sample was screened through email/telephone contacts to identify final group of the research cases.

Ultimately, the process of personal contacts and informal discussions with all these actors (people or organisations) in order to gather information and reach women-owned businesses in Jordan's technology sector, helped the researcher to build a good understanding of entrepreneurship in the technology sector, and particularly amongst women in Jordan. Two main points were identified from this experience: **first**, the number of female-owned entrepreneurial firms in technology sectors in Jordan is limited. There is very limited or in some case, no presence of female-owned technology firms in some of the avenues explored. Contacts made with some

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<sup>6</sup> This list includes the names of the list provider and the number of the firms that were obtained through those organisations. Some of the organisations which were contacted had suggested contacting another business organisation as they did not have a list or did not provide any names.

<sup>7</sup> These firms were five arts and crafts firms, 21 traditional industrial firms, four trade firms, a media firm, a law firm, a school and a nutrition clinic.

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individuals emphasise this point as many of them mentioned very few names (one name in most cases) or had no knowledge of women-owned businesses in the technology sector.

**Table 3.1: potential research sample**

<i>Name of the list provider</i>	<i>Number of firms</i>
<b>Technology associations</b>	
Intaj	2
<b>Technology business accelerator and investment companies</b>	
Oasis500	17
<b>Platform for empowering entrepreneurs in the MENA region</b>	
Wamdah	13
<b>Technology business incubators</b>	
iPark (Jordan technology incubator)	41
Queen Rania Center for Entrepreneurship	11
Al Urdoniah for Innovation	18
<b>Technology entrepreneurs and CEOs in Jordan's technology sector</b>	
	17
<b>Total</b>	<b>119</b>

**Second**, interest in technology enterprise in the country or, as they described it, technology entrepreneurship ‘fever’, is a recent phenomenon. What is notable is the increasing number of would-be female entrepreneurs in some places. This might reflect recent developments in the entrepreneurial ecosystem in Jordan, which has started to attract potential female technology entrepreneurs. In addition, it raises some questions about the type, amount and available support for those would-be entrepreneurs in this sector, as well as the question as to why such initiatives flourish in some places and not in others. Informal discussions with a cross section of contacts from a range of organisations also helped the researcher to understand better certain aspects of the findings, and helped with the extraction of some recommendations presented in Chapter 9.

#### **3.4.1.6 Email/telephone screening**

Email and (or) telephone screenings were conducted with all of the female entrepreneurs identified in order to define their eligibility. The email/telephone

screening included questions that addressed the eligibility criteria (see Appendix A) of the female entrepreneur's firm. These criteria comprised inclusion and exclusion elements (Whittemore and Knafl, 2005). The inclusion elements reflected that the firm had met the research eligibility criteria, while the exclusion elements implied that the firm had not met these criteria. These elements helped to define whether or not the female entrepreneur's firm belonged within the research population. Negative responses to any of the following questions indicated that the firm did not meet the research inclusion criteria.

- **Firm's ownership:** did the female entrepreneur own 50 per cent or more of the firm at any stage of the business (start-up and (or) currently)?
- **Firm's creation:** did the female entrepreneur create this firm? (i.e. it was not inherited or purchased).
- **Business management:** was the female entrepreneur involved in the day-today management activities of the business?
- **Firm's first commercial sales and (or) first hire:** had the business achieved its first commercial sales of the product/service? And (or) had the female entrepreneur hired the first full-time employee?
- **Business industry:** was the female entrepreneur's business in the technology-based industries? (software, digital media, mobile application, web/internet service, animation, engineering activities and technical consultancy, ICT consultancy, energy, biotechnology, life science, pharmaceutical research and development, computer equipment and medical equipment). The definition of technology-based firms, which was adopted in this study used industry definitions and was adapted from Glasson et al. (2006) and Hecker (2005).

From the potential sample some firms were excluded from the study for five main reasons (see Table 3.2). These reasons reflect the current study exclusion criteria, which included:

- **Ineligibility of firms:** firms did not meet one of the research eligibility criteria.

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- **Non respondent firms:** contact was made by email and (or) phone for at least four times; however, these female entrepreneurs did not respond to any of these contacts.
- **Unwilling to participate:** firms met the research eligibility criteria, but they were not willing to participate in the study.
- **Contact was lost during the data collection stage:** firms met the research eligibility criteria and initial agreement to participate in the research had been made. However, during the data collection period when they were re-contacted to arrange an appointment but there was no response.

Based on the email and (or) telephone screening, an Excel document was created to record the female entrepreneurs' responses. Of 52 firms: 11 firms had not responded; three of them were unwilling to participate; and 20 firms were ineligible<sup>8</sup>. This produced a total population of 18 firms that fitted the research criteria. An initial agreement with those potential participants during the data collection period was made approximately two months prior to the data collection period. All 18 firms were re-contacted by telephone to confirm a personal acceptance to participate in the research and to arrange the first interview meeting. However, the contacts with two of them were lost during the data collection stage, and after the initial agreement to participate. Thus, 16 firms remained and two firms were selected for the pilot study<sup>9</sup>. Thus, the final sample consisted of the founders of 14 firms which were eligible and willing to

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<sup>8</sup> Ten of these firms were not a good fit with the research according to the technology-based definition, where all of them were in the e-commerce industry. In addition, five of the women owned less than 50% of the business since they started, four had not yet achieved either first sales or hire and one of those firms had been purchased.

<sup>9</sup> These two firms were selected to participate in the pilot study according their availability during the pilot study time frame.

participate in the study. One firm was owned by two female entrepreneurs and, therefore, the interview was conducted with both of them.

The first interview appointments were arranged by telephone with those women willing to take part and the second appointments were arranged at the end of first interview stage. At the first interview, each female entrepreneur signed a copy of the research consent form and another copy was given to them. The procedures for data collection are described in the next section.

**Table 3.2: Research email/telephone screening**

Result of filtering process	Number of firms
<b>Excluded firms</b>	
No response	<b>11</b>
Ineligible firms	<b>20</b>
Unwilling to participate	<b>3</b>
Contact lost during the data collection stage	<b>2</b>
<b>Included firms</b>	
Pilot study	<b>2</b>
Main study	<b>14</b>
<b>Total</b>	<b>52</b>

### 3.4.1.7 Interview protocol

A formal interview protocol was designed at an early stage in the data collection/fieldwork process (Turner, 2010) to guide the management and implementation of the research interviews (Boyce and Neale, 2006) and to maintain the ethical standards with regard to the data collection. The research interview protocol included research sample criteria, semi-structured interview questions, the interviewee informed consent form, interview procedures to inform the consistency across interviews and the research data analysis procedures (see Appendix (B)).

The development and use of the interview protocol assisted the research in two main ways: first, this protocol helped in advance to develop a detailed approach to data collection procedures and requirements (Perry, 1998), which supported consistency in the research methodology between interviews (Boyce and Neale, 2006). Second, this protocol provided guidelines preventing the interviews from deviating from the



research design framework. Thus, the research interview protocol helped support and increase the quality, validity and reliability of the research findings (Yin, 2014).

However, using the interview protocol did not restrict the type of information collected as it included some degree of flexibility, as necessary. The use of in-depth interviews facilitated extracting new information and allowed participants to inform and introduce new potential theoretical directions and themes. Thus, semi-structured, in-depth interviews were employed to provide a flexible interview format and avoid limiting the research to only highly specific interview questions.

### **3.4.2 Data collection**

To access qualitative data, the data collection stage utilised several techniques. This combination of techniques, was employed along with the in-depth interviews, and included the development of hand written network ties' maps and completion of a survey questionnaire about network ties that those female entrepreneurs mentioned over the course the two stages of the interviews. The multiple data types and two-stage interview process were used to help strengthen the validity of the research and to obtain better data for answering the research questions. Through an in-depth interview design, the data were collected to investigate both the network system in general at the macro level and groups of dyad ties at the micro level of network tie analysis. Data collection included two stages: the pilot study and research interviews.

#### **3.4.2.1 Pilot study**

The research design started by conducting two pilot studies carried out in Jordan with the founders of two technology firms in the digital context and pharmaceutical research and development industry. These two-stage, in-depth interviews were tape-recorded and notes from these interviews were taken. This technique enabled the researcher to examine the research interview design in the research area and the effectiveness of the research tools in the real fieldwork location. The main purpose of these pilot interviews was to obtain a good understanding of the research context, check the clarity of the research interview questions and ensure that the interview questions produced the type

of data which would help address the research questions. In addition, these interviews represented a good opportunity for the researcher to practise how to discuss with the female entrepreneurs issues related to their network ties using their own terms and language rather than overly academic phraseology.

The pilot studies yielded better techniques that enabled the researcher to improve her interview skills and elicit the network relationships of the female entrepreneur more naturally. For example, in order to aid the female entrepreneurs to remember their contacts during the different business stages, the interview questions were originally developed to follow the entrepreneurship process and ties that were relied on during the start-up stage and early-growth stage. However, this made the female entrepreneurs more concerned about specific dates and limited the natural flow and evolution of the interview discussion. Thus, the researcher decided to use a technique focused on the business resources that the female entrepreneurs needed to establish and grow their business. For example, the female entrepreneurs were asked to describe their start-up process and how they acquired their financial and human resources and who did they go to for advice related to the different things such as legal, financial, market and product/service development.

Therefore, after the pilot studies were completed and analysed, the format of the interview questions was modified to one based on more open questions, such as, ‘Tell me how this connection helped you?’ rather than ‘What resources did you obtain from this tie?’. In addition, the female entrepreneurs were not familiar with the research language and this represented a barrier for communication. So it was more beneficial to make the interview more conversational in style and led by the participants. For example, using the term of ‘network tie’ made the female entrepreneur either ask the researcher to repeat the question or resulted in very short, concentrated answers which lacked detail and richness.

The technique of graphic representation of the network was also tested during the pilot study. However, asking the interviewees to draw their network map at the beginning of the first interview stage made them focus on defining rather than describing their

network ties as well as reducing their natural account of their network ties throughout the interview's discussion. Therefore, an initial hand drawing of the female's network ties was undertaken by the researcher after the first interview and reconstructed by the female entrepreneurs at the end of the second stage of the interview. Through the two stages of the interview, the researcher was taking notes regarding the ties the participant mentioned; after all, the discussion with the female entrepreneur had been framed to encourage them to describe their ties.

In fact, the main purpose of using the hand written network map was to make communication with the participants easier and to help obtain a more holistic picture of their connections rather than building graphs per se. Thus, a summary of those with whom the female entrepreneurs had contact emerged over the course of the discussion of the hand written graph in terms of how and when they met, how they were helped and how frequently they contacted each other. This technique helped to obtain a rich description of the female entrepreneur's ties and also enabled the researcher to learn about any other ties they had not mentioned over the course the interview.

#### **3.4.2.2 The research interview**

The second phase of the research design included conducting in-depth interviews with the founders of the 14 technology-based firms, after reflecting on the improvements that were suggested by the pilot studies. The data that were generated from the first two interviews confirmed the decision to modify the interview format. The main purpose was to encourage the participants to speak naturally about their experiences of starting and running a business, with an emphasis on their connections used to reach and obtain the needed resources and help.

The interview guided by the set of questions, helped the female entrepreneurs to describe their network ties in the course of describing their business experience with their contacts. The main questions were followed up, as necessary, by questions related to the discussion. This technique, helped to generate more details about the network ties of the female entrepreneur's business during start-up and growth, rather than using

a very specific set of tightly defined question questions. These details helped to generate more information about the female entrepreneur's ties and to differentiate the nature of these ties through the business development stages. Although an attempt was made during the pilot study to help the participants speak about their less important or less active ties, it was recognised that this could not be achieved without more open questions.

The interviews were semi-structured and conversational in style and two stages of in-depth interviews with each female entrepreneur from 14 firms were conducted and recorded. Data collection for each female entrepreneur's firm occurred over two to three weeks. The two-stage interviews with each firm ranged from between approximately two to three hours, with most being about two hours long. Each stage ranged between about an hour and an hour and a half, a few interview were shorter than an hour, about 50 minutes with two service firms in particular. Given that the female entrepreneurs had busy schedules and in order to avoid a very long interview, each stage of the interviews was designed to be conducted within an hour. However, some female entrepreneurs enjoyed discussing their business experience and extended the length of the interview.

The first part of the research interview process set out mainly to obtain an understanding of the network ties that the Jordanian female entrepreneurs in technology firms used to reach and obtain the resources they required. Some questions, at this stage of the interview, included a discussion about the nature of the structural characteristics of the participant's network and its function. The other questions discussed the ties that were reached and used during the process of starting and growing the business. For example, the ties were utilised at the start-up to discuss the business idea, build the team and obtain the initial funds to start the business.

The second stage of the research interview was mainly to elicit and clarify more about the network ties of the Jordanian female technology entrepreneurs as well as their experience in the Jordanian context. Participants were asked to describe their relations and the resources that they reached out for and obtained through different type of ties

including family, friends, previous work contacts, professionals and other firms within the industry. This second stage interview allowed review and confirmation of the information which was provided about the network of those female entrepreneurs. In addition, while the approach to data collection was designed mainly to obtain a deep understanding of the dynamic processes of the network structure and content, some questions were asked for female entrepreneurs who had/have been involved with accelerators and incubators. It was hoped that these questions would elicit more about how they perceived their network ties as the result of these organisations' helps.

At the end of the second stage of the research interview, a summary was developed through a discussion with the interviewees to explore more about all the actors whom they had mentioned during the first and second stages of the interview. This discussion was held through using a hand written map, in terms of how and when they met and their relationship, if the information was not provided during the course of the interview. This helped to generate more information about when and how these ties were reached as well as extracting information about new ties which played a role in building their social capital. In addition, the participants were asked if these actors in their network were known to each other and if the participants acted as a connector between any two individuals in their network.

As a result, the research interview was developed and conducted to understand the characteristics of network ties and their function for the participants, through the chronological phases of the entrepreneurial process, including the business idea recognition stage, the research and development stage, the business model development stage, the team building stage, the securing investment stage and the stage of marketing and selling the product/service.

For example, each female entrepreneur was asked to describe how she had started the business, how she had obtained the financial, human and intellectual resources as well as who she had approached such as legal, financial, copyright, investment and business development advice and information about the product/service, market and industry. This helped the participants to remember and discuss their relations with those actors,

whether individuals, firms or organisation, on whom they had relied to obtain resources and help during the business development stage. By obtaining this information, there was an enhanced ability for exploring the ties they had relied on as well as other potential options they had approached in the search for resources and help to start and grow their firm. These data, at the analysis stage, presented a good source for obtaining an in-depth understanding of the network structure and its function during the process of business development.

### **3.4.3 Data storage**

Once collected, the data were transcribed and stored, in preparation for the analysis stage. Thus, transcribed interview were stored in the form of computer files. To maintain the anonymity, all the participants' names and the names of their network ties (persons, firms, and organisations) were coded. The data comprised about 450 pages (1.15 spaced text and 12 font size) representing about 140,300 words. Interview files were created for each case, which included the research questions and the informants' answers.

The research interviews were transcribed, stored and analysed according to the language used for the interview, where four interviews were in Arabic<sup>10</sup>. For the purpose of using some illustrative examples in the discussion chapters, translation of the Arabic quotations have been provided. The initial translation of these quotations was performed by the researcher and then together with the complete interview transcriptions they were reviewed by an external auditor for amendment as appropriate. In addition, as the English is the second language of those participants who selected to speak in English, the illustrative examples may occasionally show some grammatical errors or appear not to be fluent language.

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<sup>10</sup> During the interview the participants were free to speak in English or Arabic as their first language is Arabic; however, most of them have good English. Thus, most of them preferred to speak in English and four of them preferred to speak in Arabic. The Arabic transcript cases were: F11, F12, F13 and F14.

#### **3.4.4 Research unit and level of analysis**

The entrepreneur's network is a set of dyadic ties and links attaching the focal individual to other different actors (Wasserman and Faust, 1994). Therefore, an ego network was constructed by the founder (ego) and his/her ties to other actors (persons, firms and organisations) (Witt, 2004; Wasserman and Faust, 1994). The interest of this study is on the female entrepreneur as an individual (ego) and her ties. Building upon this, this research analyses the focal actor's network (female entrepreneur) and her network ties. Thus, in cases where there are two active members involved in the business, this research analyses the ties that the female entrepreneurs brought to the firm and dealt with to obtain and reach any of the firm's resources. The research findings will be presented at the level of the founder and her ties to others (persons or firms) (Witt, 2004).

#### **3.4.5 Data analysis**

The process of qualitative research analysis involves 'three concurrent flows of activity: data reduction, data display and conclusion drawing/verification' (Miles and Huberman 1994, p. 10). The data analysis process of this research, therefore, included these three interrelated analysis phases.

##### **3.4.5.1 Research data reduction**

In the qualitative data analysis process, the main challenge lies in generating sense from a large amount of data (Patton and Patton, 2002). This needs a process for classifying the data according to a logical system in order to facilitate the data analysis process (Whittemore and Knafl, 2005). The main concern for the qualitative researcher is to use and apply a 'systematic conceptual' and analysis approach that 'leads to credible interpretations of data and also helps to convince readers that the conclusions are plausible and defensible' (Gioia et al., 2013, p. 15).

The reduction of research data includes a process of data 'selecting, simplifying, summarising and transforming' (Miles and Huberman 1994, p. 10). This process enables the researcher to manage the data in a way that facilitates verification and drawing conclusions. In analysing the qualitative data, the inductive systematic

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approach involves a presentation for first and second-order analysis (Gioia et al., 2013). First-order analysis ‘uses informant-centric terms and codes’ and the second-order analysis ‘uses researcher-centric concepts, themes, and dimensions’ (Gioia et al., 2013, p. 18).

This research analysed the data in each research participant’s interview and later across the 14 cases. The data, within and across cases, was discussed in relation to both research questions. This allowed a deep understanding of the similarities and differences in the context of the research questions and the generation of findings, that will be presented in Chapter 6, 7 and 8. Therefore, the creation of themes and process of analysis were performed at two levels of analysis: within-case analysis and cross-case analysis.

**Within cases analysis:** At the level of within-case analysis, each of the 14 cases was coded separately and into their own themes. Within-case analysis comprised a process of identifying the themes that appeared for each case and related to the research questions. Through using NVivo software, the within-case analysis process included highlighting sections of the interview’s text that related to those identified themes. The main purpose of undertaking within-case analysis is to obtain rich familiarity within each case ‘as a stand-alone entity’ (Eisenhardt, 1989, p. 540). This process enables the researcher to identify the themes related to each case before looking to generalise across cases (Eisenhardt, 1989) and reaching a conclusion as to whether this case is unique or a unit of breadth in the group of cases (Miles and Huberman, 1994).

**Cross-case analysis:** At the level of cross-case analysis, a replication strategy is used to examine the extent to which ‘different cases appear to share similar profiles and deserve to be considered instances (replications) of the same type of general cases’ (Yin, 2014, p. 166). This level of analysis includes a process of looking for ‘within group similarities coupled with intergroup differences’ (Eisenhardt, 1989, p. 540). Thus, analysis across the 14 cases was conducted in order to discover the extent to which cases contribute to the identified patterns.



For generating and analysing the research themes at within and cross-case levels of analysis, the data reduction phase was facilitated by using some commonplace computer software including NVivo. The use of NVivo software, as an assisting tool for analysing qualitative data, helped with organising the large amount of data and enabled the researcher to undertake computerised text searches. For the purposes of being analysed, the text for each case was imported into the NVivo software programme. The programme provided several tools to facilitate data analysis, such as searches that could be made for specific words across all the texts for all the cases. In addition, NVivo provided the memo-ing tool for emerging ideas and themes, which facilitate tracking and building of the themes from the data.

The research data analysis included a process of coding interview text to create emergent first-order categories or labels, which reflected the participant's terms and categories. Through a careful process of presenting the participants' terms and ensuring accurate reflection of their concepts, a continual process of revising and recoding was made. The first-order analysis produced over 80 first-order themes from the 14 cases (Gioia et al., 2013).

As the analysis process progressed to the second-order analysis, the researcher started to ask 'whether the emerging themes suggest concepts that might help us describe and explain the phenomena we are observing' (Gioia et al., 2013, p. 20). Thus, first-order themes were re-organised to generate second-order themes, and then these themes were further condensed to produce aggregate dimensions that were identified within and across cases. Organising the data into first and second-order categories and then aggregating over-arching themes allowed subsequent building of a structured form (Gioia et al., 2013). Figure 3.1 illustrates the structure of the research's themes. Appendix (C) includes samples of the first and second-order analysis.

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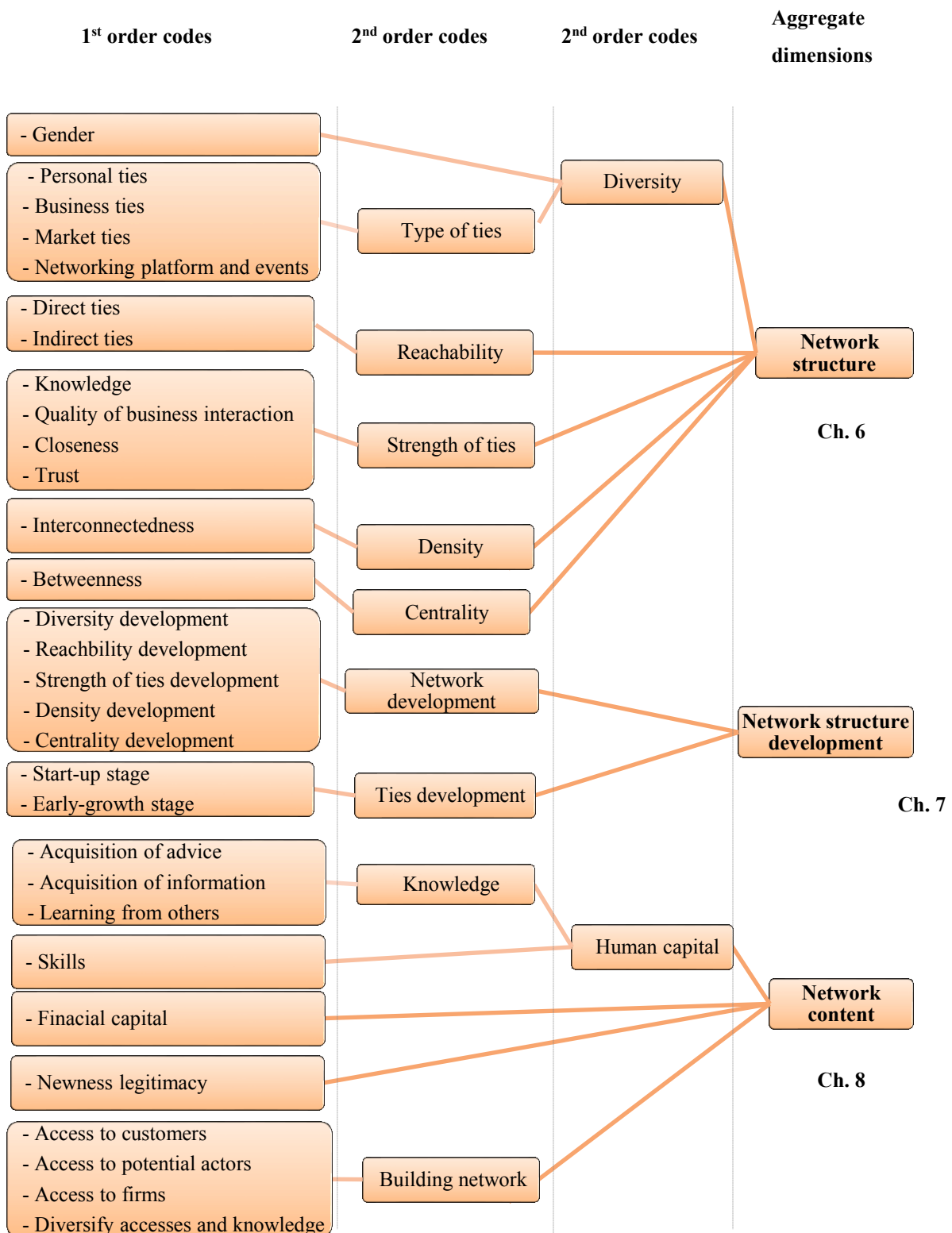


Figure 3.1: The research structure of themes

Source: Researcher

This thematic structure, included three aggregate dimensions (i.e. over-arching themes) reflecting the patterns that emerged: network structural characteristics, network content and network development process. These over-arching themes comprised first and second-order concepts, in which the participants' network at micro and macro level were explored. The network at the macro level reflects the themes that described the network system in general or group of ties, including the themes related to: network diversity, strength of ties, density, reachability and centrality and their development. The micro levels imply the themes that describe a specific tie (i.e. a person or a firm), including the themes related to: type of ties (personal ties, business ties, market ties and networking platforms and events), tie gender, direct and indirect ties, tie content and ties' development. These themes at the network micro level involved a descriptions of the type of relationship that they have with each tie and 'how' (direct and indirect ties), 'when' (start-up and early-growth ties) and 'why' (tie's content) they connected with each tie throughout their entrepreneurial process.

An attempt was made to extract information from the participants about a large number of those ties, either an actor (a person or a firm) or group of individuals (i.e. persons or firms), which they reached and used to obtain the required resources through the development process of the business. Whilst remembering, mentioning and describing the entire network ties of those participants is difficult, due to the complex nature of the network topic itself and the limited time of the interview, this limitation was address through: a) use of the resource-based questions to help them to remember their network actors; b) the network ties of each participant were checked at the end of the second stage of the research interview process which gave a another opportunity for the participants to describe their ties deeply, as discussed in Section 3.6.2.

Therefore, the data showed that the participants were describing their relationships with a specific tie or an actor, either a person, a firm or an organisation (e.g. an investor, a friend and a mentor) as well as a specific group of persons, firms or organisations (e.g. family, friends, distributors and clients). Through an analysis of the qualitative data, the micro-level themes from the network allowed the researcher to

identify a number of different actors through whom the participants obtained resources. Each case included a description of different ties, which ranged from 14 to 47 different actors. The ties described through the 14 cases included 368 ties, representing a good foundation for describing and analysing the network structure characteristics of these female entrepreneurs. The qualitative description of these ties enabled the researcher to derive quantitative data (i.e. some figures). Thus, quantitative analysis of these ties across cases will be provided in Chapter 7 to enrich the understanding of the qualitative text.

#### **3.4.5.2 Research data display**

Data display is a process of organising and assembling the reduced data in a way that helps to draw and verify the conclusions (Miles and Huberman, 1994). This phase of data analysis represents a stage of helping the researcher to make comparisons across all primary data sources (Whittemore and Knafl, 2005). Different forms of data display are typically used such as figures, tables, charts, and (or) graphics (Whittemore and Knafl, 2005). For the current research, data were displayed in different ways which was facilitated by use of computer software.

First, the use of the tree structure showed the final themes that emerged through the text coding process. This research theme structure is a product of a continuous process of recoding and revising as each and across interview texts, were introduced into the analysis process. Second, data display was also used through the quotes and citation from the nodes drawn from the text. The NVivo node tree included organised data showing each case's citations, which were used throughout the analysis discussion. The third kind of data display was the use of tables, figures and models throughout the data analysis discussion in Chapter 6, 7 and 8. This kind of data display was facilitated through use of some computer programmes including Microsoft Office. The final models presented in these chapters reflect the theoretical development and explanation of the research data.

### **3.4.5.3 Drawing research conclusions**

Drawing conclusions represents the process of reflecting the meaning of the data analysed (Miles and Huberman, 1994). Miles and Huberman (1994) suggested several techniques to increase confidence in the generated meaning and interpretations including ensuring data quality; examining the exceptions; confirming the researcher's explanations and obtaining feedback. From this perspective, the research conclusions were drawn based on analysis of the original empirical material gathered from each participant, allowing the identification of key themes, which were then verified through a process of data comparison.

The research results and findings are presented in Chapters 6, 7 and 8. These chapters are preceded by Chapters 4 and 5. Chapter 4 provides a detailed discussion of the social and institutional context in which these firms operated. This review is important given that very little is known about the research context and helps to improve the understanding of the research findings. Chapter 5 provides a brief presentation of the findings from each case in terms of the participant's background, their business development process and their network ties. This presentation of each case's findings helps to build a better understanding of the research findings in the later chapters.

Then the research findings chapters were guided by the research data and resulted from the data analysis process from both within and cross-case analysis. The final research conclusions addressed the research questions regarding the characteristics and development process of the network ties and the content of the female entrepreneurs' network in the Jordanian technology sector. These conclusions represent the 14 firms established by the female entrepreneurial participants from which the findings emerged.

## **3.6 Evaluation of the research method quality**

Researchers debate the appropriateness of the criteria of validity and reliability in qualitative studies (Golafshani, 2003; Seale, 1999). Some researchers argue that these terms are relevant for the quantitative paradigm and are inappropriate in qualitative

work (Saunders et al. 2009; Mason, 2002). For the purposes of evaluating the quality of qualitative studies Lincoln and Guba (1985, p. 294) identify four criteria: ‘truth value’, ‘applicability’, ‘consistency’ and ‘neutrality’.

The first criterion is ‘truth value’, which is concerned with establishing the credibility of the research findings and measuring how far these findings make sense to the reader (Miles and Huberman, 1994). This criterion is associated with the internal validity of the research data and findings (Lincoln and Guba, 1985). For this research, some tactics were employed to increase the research’s truth, value and internal validity: the use of the two-stage interview; keeping the number of the research cases open until a good number of eligible cases were identified which helped to reach saturation in the data. In addition, this research addressed internal validity through the use of pattern matching (Yin, 2014) and the involvement of the participants in the process of reviewing the data on the network ties at the end of the second stage of the interviews, as explained in Section 3.4.2.2.

The other criterion for evaluating qualitative research is related to applicability, which is concerned with external validity (Lincoln and Guba, 1985). Applicability and external validity are needed to assess whether the research conclusions have enough data input (Miles and Huberman, 1994). The purposive sampling frame and the use of multiple cases were applied in this research as techniques supporting research applicability and external validity.

The criterion of consistency is addressed through issues related to reliability (Lincoln and Guba, 1985). Consistency and reliability ensure ‘whether the process of the study is consistent, reasonably stable overtime and across researchers and methods’ (Miles and Huberman, 1994, p. 278). For this research, consistency was demonstrated through a range of techniques, including: the use of the interview protocol; the use of the multiple cases (Yin, 2014) and pilot studies to ensure the interview questions could meet the research objective.

The final criterion is neutrality, which is whether the research findings depend on the 'respondents and conditions of the inquiry and not ... the biases, motivation, interest or perspective of the inquirer' (Lincoln and Guba, 1985, p. 290). This criterion is associated with the objectivity of the study findings (Miles and Huberman, 1994). Neutrality in this research was maintained through the maintenance of a record of the research process, methodological decisions and data coding and analysis (Shenton, 2004).

### **3.7 The use of secondary material and data**

The research utilised some secondary sources of data to build up an informative backdrop against which Eastern societies, especially Jordanian business, and the social and institutional context could be considered (Chapter 4). These secondary sources of data included reports and statistics of many international organisations and national government and non-government bodies. The international organisations' reports and figures, such as the Global Entrepreneurship Monitor (GEM) and World Bank reports, have been utilised mainly to reflect the local, regional and global entrepreneurship activities in general and women's entrepreneurship in particular. Some reports, also, were used to understand Jordan's economic development and business environment, such as the Index of Economic Freedom and the Global Competitiveness Reports.

Government and non-government reports and statistics in Jordan were utilised to draw a clearer picture about the Jordanian context. Therefore, government reports of some bodies, including the Jordanian Department of Statistics (JDS) and the Ministry of Higher Education and Scientific Research (MHESR) were employed to gain a richer understanding of women's education and employment situation. On the other hand, some organisations' reports from Jordan's technology sector, such as Intaj's reports, were utilised to develop the background about the Jordanian technology entrepreneurial ecosystem. The researcher also used a wide range of business support organisations' websites and some of their reports to develop insights into the Jordanian institutional environment. All this material was useful to enhance understanding of the research context.

### **3.8 Research method limitations**

This study is exploratory and therefore, one of the potential limitations of the research is related to the absence of other studies presenting an investigation of the Eastern entrepreneurs' network relationships, in general, and the networking process of the female entrepreneurs in particular. The research conclusions, therefore, depend on the data that were collected from the research participants. This research, therefore, used the pilot studies as an approach to examine and learn about the phenomenon. In addition, the network-based studies within the current literature, which is mostly Western-centric, act as another point of view that may help to benchmark this study. Although this point of view may not be supported or relate to the participant's descriptions given that her actions are based on her view and in a different economic, social and cultural context, a better understanding of the female entrepreneur's networking process can be obtained through drawing on data from the two perspectives.

Another potential limitation of the study method is the use of personal contacts to identify the research sample. The researcher used personal contacts with different bodies to find out about many firms. However, given that most of these bodies are known to each other, the effectiveness of learning about very different firms might be affected. To increase the probability of accessing new firms which were not involved in business incubators, attempts were made to learn about other cases from a range of different avenues, such as the female entrepreneurs themselves, some CEOs within Jordan's technology market and one of the regional networking platforms.

The scope of the research represents the other potential limitation of the study, which was restricted to studying the founders' networks of 14 technology firms. Although the industry and geographical focus could help to control many variables, this focus represents a potential limitation of the research in terms of the limited generalisability to Jordanian female entrepreneurs in other industries. In addition, the research included 14 cases, which limited the potential of analytical generalisability of the research



findings to a larger population; however, these findings represent a foundation for future research.

### **3.9 Summary**

This chapter has identified and described the research design and methodology which was used in this study to explore the development process of the network ties of the Jordanian female entrepreneurs in new technology-based firms. This section of the thesis has discussed the research objective and questions, the in-depth interview design, the process of the data collection and analysis, and the potential limitations of using the chosen research method.

## **Chapter 4: Female entrepreneurship in Jordan: business, social and institutional environments**

### **4.1 Jordan: an overview**

Jordan is located in the heart of the Middle East with almost landlocked borders, a landmass of about 89000 (sq.km) (Fariz, 2002) and a total population of approximately 6.6 million, with a median age 21 years (JDS, 2014). Jordan's economy has ranked amongst the most open economies in the Middle East with a good level of foreign investment and trade (Stevenson et al., 2010). The country has a good business environment for private business growth as it is classified, in the 2014 Index of Economic Freedom, as a 'moderately free' economy (Miller et al., 2014, p. 42). According to the Jordan Economic Monitor in 2012, real GDP growth was 2.6% in 2011, 2.3% in 2010, 5.5% in 2009 and 7.2% in 2008 (Yaghmour and Masri, 2012); it reached 2.8% in 2013 with a marginal increase (Harake et al., 2014). This difference in the real level of Jordan's GDP growth is a result of a significant deterioration in the stability of neighboring countries during recent years, exposing the country to many economic and security challenges (World Bank, 2012a).

Further, the country is characterised by its limited natural resources, and therefore, its comparative advantage depends on its human resources (World Bank, 2005). Building on this latter asset, the country has started to invest in human resources as a main plank in its economic transition towards achieving a higher level of economic development (Hakki and Somach, 2012). This investment includes a considerable effort to formulate and develop its technology capabilities and to strengthen its education and life skills sectors (Hakki and Somach, 2012; World Bank, 2005). This strategy has achieved significant results as measured by social indicators, such as the quality of educational outcomes and the gender gap in education (Hakki and Somach, 2012; World Bank, 2005). Nonetheless the country is characterised by its high unemployment rate, which during the fourth quarter of 2014, reached 19.1% for females and 10.9% for males (JDS, 2015).

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In this situation, the importance of developing potential alternatives by government that will encourage entrepreneurial activities has become a significant factor in helping to enhance economic growth and tackle the high unemployment rates (IFC and CAWTAR 2007). So, for example, in 2009 the government reduced the paid-in minimum capital requirements for starting a business by 97 percent (World Bank, 2012b). In addition, recently the country has sought to become a member of several international trade organisations and has signed numerous trade agreements as a part of its efforts to strengthen economic growth and promote entrepreneurship activities (MPIC and UNDP, 2011). For example, in 2011 Jordan became a member of the European Bank for Reconstruction and Development (World Bank, 2012a). The Bank mainly focuses on fostering the transition towards an open market economy and on promoting private and business activities (World Bank, 2012a).

Studies indicate that Jordan has continually improved its human development indices by facilitating business activities to strengthen the economy and human development (MPIC and UNDP, 2011). However, the country faces deep challenges in its efforts to achieve greater levels of economic development through business creation, especially with the lack of venture capital and low per capita income (World Bank, 2012a; MPIC and UNDP, 2011). As a reflection of this, the proportion of entrepreneurial ventures established is still low, especially among women. Figures indicate that rate of participation by Jordanian women in economic activities, as a business owner, is among the lowest regionally and globally (Bearing Point, 2007; IFC and CAWTAR, 2007; Peebles et al., 2007).

### **4.2 The business environment and female entrepreneurship in Jordan**

The Global Competitive Report 2013-2014 has classified Jordan's economy as an 'efficiency-driven' economy, with significant opportunities for improvement given its current rank in ICT use (World Economic Forum, 2014). In fact, Jordan's economy has witnessed many developments, particularly in the private sector (Majcher-Teleon and Slimene, 2009). These developments emerged following reforms that restructured the country's economic activities starting in early 1990; these included encouragement

of privatisation, minimisation of trade tariff barriers and signing up to many trade agreements (Majcher-Teleon and Slimene, 2009). Despite such significant developments as the opening up of its economy and creating a favourable business environment (Miller et al., 2011), more is required particularly with regard to increasing the rate of entrepreneurial activity (Stevenson et al., 2010) and creating a new generation with new skills.

With the high unemployment rate, job creation for a youthful population is one of Jordan's first priorities, particularly given the relatively low private sector participation in economic activities (Stevenson et al., 2010). This is an indicator of 'either a more favourable environment for the formalisation of enterprise or a low level of subsistence economic activities' (Stevenson et al., 2010, p. 91). This forces policymakers to seek better strategies for creating value added jobs and encouraging the private sector to participate in absorbing additional members of the labour force (Stevenson et al., 2010).

Broad agreement exists about the key contribution that entrepreneurial activities can make to economic development and job creation (Robb and Coleman, 2010; Wennekers and Thurik, 1999). Increasing the prevalence of entrepreneurial activities is a significant opportunity to develop a more entrepreneurial culture among young people and facilitate would-be entrepreneurs' entry into the market, and it could bring significant benefits to the country. In measuring entrepreneurial attitudes at the individual and societal levels, the GEM report indicates that Jordanians have a positive attitude toward entrepreneurship (Stevenson et al., 2010). However, despite that entrepreneurship is considered a good future career choice, few Jordanians express an intention to start a business for fear of failure (Stevenson et al., 2010). Considering this, the prevalence of entrepreneurial activities in Jordan is considered relatively low and below expectations given that the country has a good level of development (Stevenson et al., 2010). The country's highly educated young population, particularly women, represents a significant opportunity to create benefits at both micro and

macro-economic levels by increasing their participation in economic activities, (Stevenson et al., 2010).

Official figures reflect that female participation in the workforce is low both as an employee or business owner, and there is a high percentage of unemployment among women. This represents a high level of waste of the human and national resources, particularly those women who are very well educated (Peebles et al., 2007). Recent official figures show that the proportion of female students pursuing higher education during 2012/2013, undergraduate mainly, has reached about 51%, compared with 49% for males (MHESR, 2013). In the same year, females graduating from science, computer science and engineering programmes constituted 48% of that student population (MHESR, 2013). Despite the fact that around half of the graduates, particularly from the ICT programmes, are females, they represent about one-third of ICT total employment (Al Jidara, 2014). It is notable that the unemployment rate among those holding a bachelor and higher degree, reached 76% for female compared with 24% for males (MHESR, 2013). Thus, economic empowerment of women represents one of important challenges in the country, particularly in the technology sector where current levels of engagement by women are low (Al Jidara, 2007).

Women's economic participation as business owners is also low. Figures have changed during recent years, where according to the Jordanian Department of Statistics during the period between 2005 and 2011, the percentage of women who were employers or self-employed ranges between 4% and 4.5% of employed females. This percentage declined to 3.6 percent of employed women in 2012 and 2013, compared with 16.6 percent of employed men (JDS, 2013, 2014). The Jordan human development report indicated that only 5.3% of businesses are owned by women compared with 94.7% of owned by men (MPIC and UNDP, 2011). The figures for businesswomen in Jordan fall below world standards at between 25%-33% (Bearing Point, 2007).

In an attempt to understand the low level of Jordanian women's involvement in entrepreneurship, four main factors within Jordan's business environment can be identified:

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**First:** limited financial resources represent the key obstacle in the path of would-be women entrepreneurs starting a business and female entrepreneurs in their efforts to grow their business (Al Jidara, 2014; Stevenson et al., 2010; IFC and CAWTAR, 2007; World Bank, 2005), with average start-up funding requirements for Jordanian enterprises being the equivalent of around US \$14,200 (Stevenson et al., 2010). Financial capital availability is frequently cited as the main challenge that faces women in Jordan and in other Middle Eastern countries, and it is perceived as a primary barrier to entrepreneurial venture start-up and growth (World Bank, 2012a; Chamlou, 2008; IFC and CAWTAR, 2007; World Bank, 2005). These financial difficulties include:

- a) The limited availability of private finance for starting new ventures and supporting small and medium-size businesses, which is constraining for some sectors, especially in technology (World Bank, 2012a).
- b) Dependence on personal savings to secure finance for start-up or growth is difficult sometimes due to the low per capita income. In 2013 the per capita income in Jordan was \$11,782; this is relatively low compared to the region's other countries, such as Lebanon at \$17,170 (worldbank.org, 2015).
- c) The credit environment affects the funds available for female entrepreneurs in the MENA region, which ranks amongst the lowest of all regional developed capital markets (Women's Business Forum, 2011). In Jordan, the World Bank's report (2012a) suggests that despite the improvement in the accessibility of credit, there are still problems of difficulty and scope in accessing credit information in the public and private sectors as well as in protecting investors and enforcing contracts.
- d) External finance provided mainly by banks, is still limited and unable to cover the local demand and is heavily influenced by the financial institutions' programmes (Women's Business Forum, 2011) in terms of the amount and the procedures to obtain these funds.
- e) The availability of business angels in the Arab World in general is still limited and at an early development stage (Siam and Rifai 2012). In Jordan, for example, there are 23 angels, 17 of them are businessmen, three are

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businesswomen and the other three are companies (Siam and Rifai 2012). These angels provide finance to the value of about a million dollars to several projects in the emergent stages of development (Siam and Rifai 2012).

- f) The prevailing perception is that there is a gender barrier to accessing finance in the MENA region. However, the recent World Bank's report found that 'long touted as a gendered barrier, it is not significant in any of the countries except Yemen' (Chamlou, 2008, p, xi)<sup>11</sup>. The fact is that both males and females in the region face the same financial difficulties (Chamlou, 2008).

**Second**, the study of women entrepreneurs in the MENA region indicates that the second most important business concern for the Jordanian female entrepreneurs after access to capital, is learning business skills (IFC and CAWTAR, 2007). Recent figures show that the proportion of new entrepreneurs who have received professional advice and training in starting and growing a business in Jordan is low (Stevenson et al., 2010). In this context, studies found that instilling entrepreneurial practices and taking sufficient training in starting entrepreneurial ventures among graduates (Kharabsheh et al., 2011), or even at the primary or secondary school is weak (Stevenson et al., 2010). The GEM report indicates that the proportion of the Jordanian youth population which has obtained training in business start-up subjects at school represents only 3.7%, and 11% after they have finished their formal education; the informal sources of training for new entrepreneurs in the country are self-learning, current or past employment, or university (Stevenson et al., 2010, p. 99).

**Third**, the IFC and CAWTAR's (2007) study found that the high cost of public services is one of the most important business concerns for Jordanian female entrepreneurs. In an evaluation of how easy or how difficult it is for Jordanians to start a business, the World Bank (2012b) Doing Business report found that Jordan's

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<sup>11</sup> The study's countries include Jordan, Egypt, Morocco, Lebanon, Syria, Saudi Arabia, Yemen and West Bank and Gaza

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government has taken a number of steps to minimise the barriers against starting a business. This report tracks the change through the four indicators illustrated in Table 4.1.

The data overtime in this table show that those aspects required for starting an entrepreneurial process have changed and improved; great improvements can be noted in the all four aspects, especially in the minimum capital and cost required to complete the start-up procedures. Other important reforms were undertaken in 2005 by making important information available online would-be entrepreneurs (World Bank, 2005), as well as in 2010 by making a single reception service for business registration (World Bank, 2012b). Indeed, Table 4.1 reflects recent encouragement for entrepreneurial activities in Jordan, given that the government's improvements in the procedures for initiating businesses started in 2004. Furthermore, until 2009, the high cost of procedures relating to formal business registration acted as a key barrier to business entry.

**Table 4.1: The ease of starting a business in Jordan**

Indicator	DB 2004	DB 2005	DB 2006	DB 2007	DB 2008	DB 2009	DB 2010	DB 2011	DB 2012
Rank	-	-	-	-	-	-	-	98	95
Procedures (number)	13	10	10	10	8	8	7	7	7
Time (days)	79	26	16	16	13	13	12	12	12
Cost (% of income per capita)	104.1	102.1	85.5	73.0	32.8	21.7	17.7	16.3	13.9
Paid-in min. Capital (% of income per capita)	1,175.9	1,147.7	1,011.6	864.4	795.7	24.2	19.9	17.9	0.0

Source: World Bank (2012b, p. 17) Doing Business: Jordan's Report. DB= Doing Business.

**Finally**, and notably, recent studies indicate that Jordan is undergoing many of the socio-economic transformations associated with societies in transition (Bearing Point, 2007). In that regard, Jordanians attitudes to entrepreneurial activities have

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become more favourable (Stevenson et al., 2010), particularly as the unemployment rate among both highly educated men and women has increased. Whilst women's attitudes towards entrepreneurship are changing, 'their fear of failure is higher than that of men and they are much less likely to perceive they have the knowledge, skills, and experience to start a new business' (Stevenson et al., 2010, p. 90).

In addition, Al Jidara's (2014) study indicated that a group of cultural and institutional constraints still act as a limitation resulting in low levels of female economic participation in Jordan. These constraints include 'limited mobility, lack of access to information, marital status, maternity, cost of childcare, the gender wage gap and administrative barriers to home-based employment' (Al Jidara, 2014, p. 4). According to this study, the low level of women's involvement in entrepreneurship is affected by the know-how, access to funding sources and limited focus on families in encouraging entrepreneurial attitudes among their daughters. Thus, more effort and support from all stakeholders, particularly in terms of social and institutional support, are needed to increase the level of women's confidence in their ability (Stevenson et al., 2010).

#### **4.2.1 Nature of the female entrepreneurial firms in Jordan**

Empowering Jordanian women in economic activities is of importance to socio-economic development because of the benefits it brings at several levels: personal satisfaction, job creation and sustaining economic growth (Majcher-Teleon and Slimene, 2009). Notably, women-owned firms in Jordan have become more active in creating job opportunities and this share has increased recently to match that of male-owned firms (Chamlou, 2008). This share has a positive impact on the unemployment rate particularly among women, where female-owned firms are more likely to employ other women (MPIC and UNDP, 2011). At a personal level, Jordanian female entrepreneurs are seeking to start their business to achieve greater personal fulfilment (Alshaikhh et al., 2009) and professional satisfaction by taking advantage of their often high level of education (Alshaikhh et al., 2009; IFC and CAWTAR, 2007) and unutilised skills (MPIC and UNDP, 2011).

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The nature of female entrepreneurial activities reflects that most female-owned firms in Jordan are small enterprises (MPIC and UNDP, 2011; Alshaikhh et al., 2009; Chamlou, 2008), and most women have business partner(s) (IFC and CAWTAR, 2007). In a study which included 503 Jordanian female and male-owned firms, 52.7% of the women-owned firms were small and employed fewer than 49 employees; 29.7% were large firms and employed 100 or more employees; 12.2% were medium firms with employees in the range of 50-99 and 5.9% were micro enterprises with fewer than nine employees (Chamlou, 2008). Interestingly, IFC and CAWTAR's (2007) study, which included 444 female-owned firms, found that many of the Jordanian businesswomen who participated in the study have owned their business through inheriting or purchasing an existing business rather than starting a new business. This can be explained by the fact that Jordanians tend to prefer investments with low risks (IFC and CAWTAR 2007), as they have a high fear of taking risks particularly among women (Stevenson et al., 2010; Alshaikhh et al., 2009).

In terms of financial resources, women who enter the entrepreneurial process in Jordan use several types of financial resources to meet their business needs. The IFC and CAWTAR (2007) study found that most of them do not depend on external financial resources, but they rely mainly on private resources, such as personal savings, as well as the earnings for the expansion stages their business. When most Jordanian female entrepreneurs look to expand their business, finding external financial resources represents a significant growth concern (IFC and CAWTAR, 2007). The World Bank Report found that 14% of new investments in female entrepreneurial firms studied in Jordan were financed by banks or other formal resources, such as credit cards, leasing arrangements or investment, compared with 4% for male-owned businesses (Chamlou, 2008).

Studies, also, found that female entrepreneurial firms in Jordan tend to be concentrated in traditional economic activities, such as the service and retail sectors (MPIC and UNDP, 2011; IFC and CAWTAR, 2007; JNCW, 1994). Female entrepreneurs entering into manufacturing are often found in sectors such as food manufacturing, leather,

furniture and clothing (MPIC and UNDP, 2011), and they also tend to start businesses and enter markets where there are many firms providing similar services or products (Stevenson et al., 2010).

Jordanian women's rate of entrepreneurial participation in other sectors, such as technology is still low, and so there is a significant difference between men and women in this sector (Al Jidara, 2014). These results might be an indication of the tendency of Jordanian female entrepreneurs to enter sectors where the financial resource requirement and entry barriers may be lower than in sectors such as technology (Stevenson et al., 2010). On the other hand, Jordanian women lack experience in technology sectors with low levels of participation in the workforce, and fewer than one-quarter of ICT sector technical and managerial positions are filled by women (Al Jidara, 2014). This is not only the case in Jordan; women's presence in managerial position in technology sectors is under-represented across many countries. This is attributed to the unidimensional focus required in managerial careers distinct from the dual role based on work and family commitments, pursued by many women (Evetts, 1993).

### **4.3 Social environment**

Sociological theorists argue that the social context has a strong effect on women's entrepreneurship and their access to entrepreneurial opportunities (Aldrich, 1989). As a result, their family role and organised social life may restrict women's economic participation, motivation and goals for venturing into business creation (Aldrich, 1989). Thus, the extent and nature of women's entrepreneurship is also attributed along with others factors, to the social context in which they are embedded (Yetim, 2008). The degree to which the social context affects women's entrepreneurship and their engagement in the entrepreneurial process varies greatly from one country to another and is associated with the social expectations and attitudes related to women in society (Carter et al., 2001). With regard to the social context of women's entrepreneurship and their entrepreneurial activities, there are two main aspects: at the micro level, how

her own family values her role as a business owner, and at the macro level, how society values the entrepreneurship activities of women (MPIC and UNDP, 2011).

At the micro level, Ahmad (2004) found family encouragement and social ambition play a key role in encouraging Jordanian female entrepreneurs to start their own business. In that regard, the recent human development report on Jordan shows that female entrepreneurs have become more recognised and respected inside their families as reliable and productive members (MPIC and UNDP, 2011). This report indicates that 83% of the female entrepreneurs surveyed in Jordan believe that owning a business has a positive effect on their lives, in terms of increased income, control over their own lives and a more respectful position within their families (MPIC and UNDP, 2011)<sup>12</sup>. Nonetheless, recent reports on Jordanian women entrepreneurship indicate that encouragement by families of entrepreneurial attitudes in their daughters is still limited and continues to represent one of the issues affecting the low level of female involvement in entrepreneurship (Al Jidara, 2014). So, despite this increased visibility in women's economic participation as business owners, further intervention is required at the level of families to promote the entrepreneurial path as a good future career choice for their daughters.

In spite of improvements, the IFC and CAWTAR's (2007) study found that achieving this balance between family life and being active in business, still represents a social challenge for Jordanian female entrepreneurs. Marital status, motherhood and the cost of childcare are important issues that act as a limitation on women's economic participation (Al Jidara, 2014). Female entrepreneurs around the world are still responsible for many family commitments and are required to balance family-work in a way that men are not (Hampton et al., 2009; Evetts, 1993; Aldrich, 1989), but the

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<sup>12</sup> The survey of this report includes 1500 small and medium firms, which equals the number of male and female-owned firms involved in this research.

degree to which this challenge affects the female entrepreneurial process varies from one country and one region to another.

Having business and family commitments requires extra effort from the female entrepreneur in order to be successful in business, and influences their performance as they spend more time or sometimes interrupt their work for family commitments. For example, such social roles mean that women scientists in the Arab World have much less opportunity and time for building networks and joining informal meetings after work where they can network; being a mentor and getting mentored; and obtaining knowledge (Dajani 2012) that opens up new opportunities. Thus, women require more recognition and support in their family role, particularly in Arab societies (Dajani 2012), where they hold the primary responsibility for family care (JNCW 1994).

At the macro level, and in considering how Jordanian society perceives the value of women's entrepreneurship, studies show that their entrepreneurial activities are becoming more recognised in modern society (MPIC and UNDP, 2011). Generally, the role of Arab women has witnessed many transformations in different spheres and in varying degrees from one country to another (Sidani, 2005). Further this review indicated that there are many examples of women being active throughout history in trade and commerce, but over time their economic participation has dwindled. By the early 1990s, many groups in society had begun to re-emphasise the importance of women's roles in social and economic activities, and their right to education and work (Sidani, 2005).

The notion of female entrepreneurs and their lack of economic participation in Arab societies has sometimes been blamed on prevailing religious beliefs (Sidani, 2005), but in reality 'women have strong economic rights in Islam and there is a tradition of women in business. Islam has a powerful role model in the first wife of the Prophet Mohammed, Khadija, a wealthy trader and powerful businesswoman' (Chamlou, 2008, p. VI). In fact, many of the prevailing norms in Arab societies regarding women's economic participation and activities are societal and tribal: they are not religious (Sidani, 2005).

In Jordan prevalent social attitudes place women in stereotypical and traditional roles rather than professional ones, as well as portraying negative images about women's ability to start and manage new businesses (Fariz, 2002; JNCW, 1994). However, many recent studies indicate that such attitudes and many social changes have taken place, acknowledging the respectability of female entrepreneurship (MPIC and UNDP, 2011; Stevenson et al., 2010; Al-Alak and Al-Haddad, 2010). Further, in their study of the gender effect on the success of Jordanian female entrepreneurs, Al-Alak and Al-Haddad (2010) found that being married as a female entrepreneur has a positive impact on their business and gives them more opportunity to expand it. They argue, however, that this is more related to female entrepreneurs in Jordan and their striving for independence, as well as the high level of support they receive from their husbands and families.

The nature of Jordan's society is collective and builds on family cohesion (Ahmed, 2004). Indeed, members of society respect and cherish this kind of collective relationship, encouraging women's economic independence, as long as this independence does not affect family cohesion and ties (Al-Alak and Al-Haddad, 2010). Harmony and concordance, social order and family are more important in Eastern societies (Yetim, 2008). These societies are known for being strongly collectively oriented with decision-making guided by relationships rather than institutional rules, as is the case in Western societies (Batjargal et al., 2009).

On the other hand, Jordanian female entrepreneurs see that being a woman in Jordanian society does not represent an obstacle to their business (Al-Alak and Al-Haddad, 2010). In this regard, the World Bank's Report shows that no gender patterns appear in the Jordanian business environment acting against female entrepreneurs (Chamlou, 2008). However, IFC and CAWTAR's (2007) study found that being a woman limits an entrepreneur's ability to build informal business relationships with other business owners, advisors and mentors. Female entrepreneurs in Jordan experience a lack of networking even with other women business-owners, thus restricting the exchange of information and experiences between them (Ahmed, 2004).

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Overall, in Jordan, the female entrepreneurial processes require the support of both their families and society (MPIC and UNDP, 2011; Al-Alak and Al-Haddad, 2010). Both parties play vital role in the extent of female entrepreneurship and the success in starting up and expanding their own firms (MPIC and UNDP, 2011). In addition, female entrepreneurs in Jordan need more recognition and support in their efforts to balance work and family (Fariz, 2002; JNCW, 1994), as well as enabling them to take more opportunities to build their business networks (Ahmed, 2004).

### **4.4 Institutional environment**

In every country of the world, the institutional environment plays a vital role in encouraging and fostering growth in entrepreneurial activities (Roxas et al., 2006). This environment serves as a source of legitimacy, incentives and constraints on the economic activities in any nation (Clingermyer and Feiock, 2001). In Jordan, there are many governmental and non-governmental institutions that provide several types of assistance and play a crucial role in formulating strategies, policies and programmes to support individual economic activity (Fariz, 2002; JNCW, 1994). This institutional assistance focuses on promoting entrepreneurial activities through providing credit, training and marketing to many entrepreneurs and would-be entrepreneurs in Jordan (JNCW, 1994).

In terms of credit and loans, for example, these institutions provide loans that vary in their amount, collateral and level of interest rate (JNCW 1994). In addition, these institutions vary in their approach, some support focusing on creating and (or) improving entrepreneurial ventures (JNCW, 1994). In addition, there are some institutions which provide support to specific groups in society, such as female entrepreneurs and young entrepreneurs, or to specific economic sectors such as the technology sector. This section introduces some of the main associations that support and promote entrepreneurial activities in Jordan.

Government institutions run many programmes that focus on supporting individual and organisational economic activities in Jordan. Such programmes provide funds,

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training and (or) marketing for entrepreneurs directly or indirectly through several government and non-profit institutions. They are promoted through the Ministry of Social Development, Ministry of Planning and International Cooperation and the trade and Chambers of Commerce and Industry. Along with many of the governmental institutions interested in improving economic activity in Jordan, there are two major governmental organisations that mainly focus on promoting and supporting entrepreneurial activities: the Jordan Enterprise Development Corporation (JEDCO) and Vocational Training Corporation (VTC).

On the other hand, the involvement of the non-profit institutions in supporting entrepreneurial activity in Jordan has increased recently. Some of them target mainly female entrepreneurs or provide programmes that empower of women. Currently, the institutions for empowering women economically include two main bodies: The Jordan Forum for Business and Professional Women (JFBPW) and Women's Access to Entrepreneurship Development and Training Society (WAEDAT). In addition, there are other bodies, which have the empowerment of women as one of their main areas of focus, including: Noor Al Hussein Foundation (NHF) and the Jordan River Foundation (JRF).

The other main non-profit institutions supporting entrepreneurial activity in Jordan through credit and (or) business development services are: the Jordanian Hashemite Fund for Human Development (JOHUD); Young Entrepreneurs Association; IRADAH enhanced productivity centres, Injaz, Najah, Jordan Career Education Foundation; Education for Employment Jordan; MENA 100 Business Plan Competition; and Jordan Projects Ventures Corporation. Some institutions are specialised in delivering mainly financial support, assisting individuals to start their business and (or) strengthening existing enterprises, for example, The Microfund for Women, The Development and Employment Fund and The National Microfinance Bank (Alwatani).

In the last decade, notable improvements have been seen in Jordan's technology sector, where reforms have been undertaken to improve the physical and intellectual



infrastructure of the sector (Majcher-Teleon and Slimene, 2009). Thus, opportunities are emerging, especially in the ICT sector, as a result of interventions such as liberalised telecommunications, increased infrastructure accessibility, increased government support and the creation of an enhanced ICT regulatory framework (Al Jidara, 2007). In recent decades these efforts have enabled the country to become the regional leader in adapting, developing and utilising information and communication technology (Intaj, 2012).

In terms of the development of individual entrepreneurs, the sector has recently witnessed involvement from a number of government and non-government bodies focused on developing technology entrepreneurship in the country. These bodies have helped to enable technology start-ups in different areas through supporting informal educational activities, such as seminars and networking events, training, consultancy and mentoring. These developments contribute to making the country a more supportive environment in which to launch a technology start-up. Jordan is recognised as a ‘haven’ for entrepreneurs in the MENA region due to the developments in its entrepreneurial ecosystem (FYGL and BC, 2011).

The major institutions that are directly involved in supporting technology-based ventures in Jordan include El Hassan Science City. The City is a non-profit institution which acts as a good environment for researchers, entrepreneurs, academics and students to work together ([elhassansciencecity.com](http://elhassansciencecity.com)). The City hosts different entities which include: the Higher Council on Science and Technology (HCST); the Royal Scientific Society (RSS); The Princess Sumaya University for Technology; and the El Hassan Business Park ([elhassansciencecity.com](http://elhassansciencecity.com)). As for other supporters of technology entrepreneurs, there are a number of organisations targeting entrepreneurs in this sector such as: the Queen Rania Centre for Entrepreneurship; Business Development Centre (BDC); Endeavor; Mowgli; Meydan,; AIUrdonia Lil Eba; and IV Holding.

Among the other supportive associations and networking platforms is the Information and Communication Technology Association (Intaj), which is interested in improving

Information and Communication Technology (ICT) and ICT-enabled services (ICTES) in Jordan's market (intaj.net). Also, the Global Innovation through Science and Technology Association in Jordan (GIST) supports technology entrepreneurial activities by identifying, training and funding the new technology entrepreneurs (gist.crdfglobal.org). In addition, Jordan has recently witnessed growing investment activities in the technology sector; some technology ecosystem builders have been established, a leading one being Oasis500, which is a seed investment and accelerator company based in Jordan (Schroeder, 2013). The Jabbar Group and N2V are other investment companies that are very active in the Jordanian technology sector (Schroeder, 2013).

Together with these institutions there are eight Science and Technological parks (STPs) in Jordan; one is related to the Jordanian Armed Forces; three are managed by governmental institutions; and the other four are related to universities (Kharabsheh et al., 2011). Moreover, there are many business incubators run by a range of business associations such as: Jordan's Technology Incubator at the HCST; Agro-industry Business Incubator at the University of Jordan; Jordan Technology Group (JTC); the National Consortium for Technology and Business Incubation (NATCTB); Academic Entrepreneurship Centre of Excellence (AECE) incubator system at Yarmouk University; and others (European Trend Chart on Innovation, 2005).

In addition to the main institutions that work directly to support entrepreneurial activities in Jordan, there is a group of private, non-profit and governmental organisations that works indirectly to facilitate and strengthen organisational and individual economic activity. Notably, the majority of these institutions and incubators depend largely on foreign assistance offered to developing countries through a number of international organisations (Scaramuzzi, 2002). This assistance is received directly through these international organisations or indirectly through the Ministry of Planning and International Cooperation. These international organisations include for example, the USAID, World Bank, International Finance Corporation IFC, United

Nation UN, UN Development Fund for Women and the Japanese government (Scaramuzzi, 2002).

#### **4.5 Summary**

In summary, women's entrepreneurship is determined by the economic, institutional and social structures in which the individual is embedded (Yetim, 2008). Thus, the extent of the society's cultural and financial support provided can be an effective indicator as to the level and nature of entrepreneurship in the society (Xavier et al., 2012). This review has provided a background to the Jordanian business, institutional and social environments in order to examine the role of these environments in shaping women's entrepreneurship in Jordan. This review has discussed the form of support and constraints that exist at the macro-national level in Jordan, and which affect the female entrepreneurial process in different ways and to varying degrees.

## **Chapter 5: The data source: cases studies of Jordanian female entrepreneurs in technology-based firms**

### **5.1 Introduction**

The founders of 14 technology-based firms participated in this research and constituted the source of research data. These cases were selected based on the theoretical and practical criteria as discussed in Chapter 3. This chapter focuses on providing a description of the cases from which the data were obtained. These descriptions allows the reader to achieve a better understanding of the research findings, given that it provides details about the context of the cases and the settings of the networks of the participating female entrepreneurs. These female entrepreneurial firms were between a year and four months and eight years old, based on the data obtained during the email/telephone screening. Two interviews were conducted with the entrepreneurs of each firm, totalling about 30 hours of interviews. The following section describes the background of the female entrepreneurs and their firms.

### **5.2 Backgrounds of the female entrepreneurs**

Familiarity with the participants' backgrounds helps provide a better understanding of the cases under study. Each female entrepreneur's profile in this section includes the female entrepreneur's age at business start-up; education level and subject; nature of past work experience and parental background<sup>13</sup>. Table 5.1 illustrates this profile.

The participants' age when they started their business ranged between 23 and 49 years. With regard to their education level, all participants held a university qualification,

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<sup>13</sup> a) One firm was owned by two female entrepreneurs and so, an interview was conducted with each of them separately. Thus, the table includes a profile for fifteen female entrepreneurs. In addition, the information about the parental background of two participants was incomplete.

b) For citation purposes, cases will be cited by the firm's number, for example, F1, F2, F3 ... and so on.

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having at least a bachelor's degree. Their degrees were in different subjects including science, engineering, technology, art and business. This indicates that the research participants had strong academic backgrounds, with most of them from science, engineering and technology.

**Table 5.1: The background of the participants**

<b>Firm</b>	<b>Age of founder at start-up</b>	<b>Education level</b>	<b>Education subject</b>	<b>Pre-entrepreneurial experience (same or relevant field)</b>	<b>Parents' background: father (mother)</b>
<b>F1</b>	23	Bachelor	Engineering	Yes (No)	Work for a company (Business owner)
<b>F2</b>	23	Bachelor	Information technology	Yes (Yes)	Business owner (Work for a company)
<b>F3</b>	30	Bachelor	Art	Yes (Yes)	Professional (Business owner)
<b>F4</b>	39	Bachelor	Engineering	Yes (No)	Not known (Not known)
<b>F5</b>	35	Bachelor	Engineering	Yes (Yes)	Professional (Work for a company)
<b>F6 (a)</b>	29	Bachelor	Art	Yes (Yes)	Works for a company (House wife)
<b>F6 (b)</b>	29	Masters	Media	Yes (Yes )	Business owner (Not known)
<b>F7</b>	44	Bachelor	Computer science	Yes (Yes)	Work for a company (Work for a company)
<b>F8</b>	35	Master	Computer science	Yes (Yes)	Merchant (Housewife)
<b>F9</b>	49	Master	Business	Yes (No)	Professional (Housewife)
<b>F10</b>	30	Bachelor	Art	Yes (No)	Professional (Housewife)
<b>F11</b>	30	Bachelor	Information technology	Yes (Yes)	Work for a company (Work for a company)
<b>F12</b>	37	Bachelor	Science	Yes (No)	Professional (Work for a company)
<b>F13</b>	32	Bachelor	Engineering	Yes (Yes)	Work for a company (Housewife)
<b>F14</b>	30	Bachelor	Engineering	Yes (Yes)	Merchant (Housewife)

With regard to their past work experience, all of the participants had work experience before they started their current technology business: ten of them worked in the same field (of whom two worked in relevant fields as they were developing content,

targeting different sectors), while five of the research participants had experience in a different sector, unrelated to the technology industries in which they now have their business. This pre-entrepreneurial work experience ranged from between six months to 30 years; so, some participants had a limited period of work experience. Most of the female entrepreneurs had worked in the private sector before they started their own firms: nine of them had worked in managerial positions, three as an employee and three were self-employed (freelance).

In addition to their previous work for other companies, three of the research participants had owned a previous business before they launched their current business. One of them had owned a business in the technology sector and had switched from a service-based business to start a product-based firm. The other two participants were still running their other non-technology business and they had launched their first firm in the technology sector.

With regard to their parental backgrounds, four of the participants' fathers had their own businesses: five were working for companies (either publicly or privately-owned companies) and five were classified as professionals, including working as a medical doctor or engineer. Two of the participants' mothers had their own businesses, five of them worked for companies and the others not did work.

### 5.3 Case profiles

Each of the research cases will be described in this section, providing details of the type of technology of the founders firms; the age of their firms and these firms' stages of development; the involvement of a lone female entrepreneur or entrepreneurial team at the start-up and currently; and then the female entrepreneur's network ties. Table 5.2 summarises the profile of these cases according to these areas.

**Case F1:** The first case was a product-based firm producing electronic devices. This firm had been founded by a sole female entrepreneur. Previously, the female entrepreneur had work experience outside the field in which she had established her

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own business. Her firm did not have a management team and did not receive any investment; she was still working as a sole entrepreneur by the time of the interview.

**Table 5.2: Case profiles**

<b>Firm</b>	<b>Firm's age: Year (month)</b>	<b>Technology sector</b>	<b>Participant's start-up<sup>14</sup></b>	<b>Sole entrepreneur (S) or Team (T) start (currently)</b>	<b>Number of described ties</b>
F1	4	Electronic devices	Incubatee entrepreneur	S (S)	17
F2	1 (5)	Animation	Independent entrepreneur	T (S)	40
F3	2	Digital content	Incubatee entrepreneur	S (T)	40
F4	7	Digital content	Incubatee entrepreneur	T(T)	14
F5	1 (7)	Engineering consultancy	Independent entrepreneur	S (S)	20
F6	8	Digital content	Incubatee entrepreneur	T (T)	30
F7	6	ICT Consultancy	Independent entrepreneur	T (T)	14
F8	6	Web/internet services	Independent entrepreneur	T (T)	14
F9	1(10)	Digital content	Incubatee entrepreneur	S (S)	15
F10	2	Digital content	Incubatee entrepreneur	S (T)	20
F11	2	Digital content	Incubatee entrepreneur	T (T)	47
F12	3(2)	Digital content	Incubatee entrepreneur	S (S)	15
F13	2	Digital content	Independent entrepreneur	T (T)	38
F14	4	Software	Incubatee entrepreneur	T (T)	20

This female entrepreneur's firm was about four years old<sup>15</sup>, having been started in 2009. The founder defined her firm as just having finished the product research and development stage. She mentioned:

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<sup>14</sup> This research defines the incubatee entrepreneurs as those female entrepreneurs who had been incubated in any organisation at any time of their business life; while independent entrepreneurs are those entrepreneurs who had not been involved as incubatees in any type of incubator.

<sup>15</sup> In this research, the age of the firm is the period from the date of registration until the interview time.

*'I feel more comfortable if I say that it is a research and development project ... because, yes, we have a product now in the market but we still don't have revenue. So, I prefer to talk about it as a research and development business'.*

In June 2013 the firm's product was already in the market, a month before the time of the research interview. She stated: *'We have done the production, we introduced the product into the market recently'*. In addition, the firm had recently started gearing up for marketing as the founder was focusing on product research and development. She commented:

*'Now I need more supporters in marketing, in investment ... I'm very interested to have someone help me, not just to have investment, but especially to develop the business side of the firm'.*

Therefore, the founder finished the product development, introduced the product into the market and, by the time of the interview, had moved her focus on to building the business structure, marketing and sales.

This female entrepreneur had approached some business organisations, following which her firm was incubated for a specific period of time in an incubator. She relied on competitions, prizes and grants to finance her business start-up. The business associations that she approached played an important role in helping her to branch out, to reach other actors and obtain some resources, including information, advice and financial support. She stated:

*'I think that they were very supportive in building connections, yeah ... they were like- if I want help , I can just call them and they introduced me to this or that'.*

This female entrepreneur's network comprised mostly business ties and other than a few family members and friends, she had no other personal ties with either friends or previous work colleagues. Her business ties included other entrepreneurs, managers and CEOs, professionals and firms within the industry. Business support organisations, local and regional entrepreneurship networking events and some newly built business ties played an important role in accessing new additional ties. In general,



her network was small but comprised a varied range of ties. She felt that these ties were good for obtaining diverse benefits: *'I think, each one of them benefited me from different aspects or points of view and perspectives'*.

Of the ties that she described, 17 dyad ties<sup>16</sup> had enough information to make an identification regarding the tie's type, gender and when and how they met.

**Case F2:** This female entrepreneur owns an animation firm. Previously, the female entrepreneur had work experience in the same field in which she had established her own business. She was an independent entrepreneur without any involvement in an incubator or accelerator. She started with another co-founder; however, a few months after the start-up, they chose to dissolve the partnership and she decided to continue building the business as the sole entrepreneur. The founder self-funded the business start-up with her personal savings.

The firm was about a year and a half old, and was started in May 2012. The firm had made sales three months after starting up and hired the first full-time employee a year and four months after the start-up, which fell during the time of the research interview. The female entrepreneur's business was still dominated by high informality in management and structure. This was apparent when she stated:

*'Six months ago, I felt that in the part of, or on the side of creativity I was doing very well, but businesswise, no, I do not have these skills or structure to my business and this is what I'm interested in now'*.

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<sup>16</sup> A) The data of each case included a description of different ties with a specific actor (e.g. an investor or a friend). The description of a specific actor or dyad tie reflects the relationship between the focal actor (female entrepreneur) and one of her network ties, e.g. '[an angel investor] is definitely more involved because he ...'. Further analysis of these described ties generated some figures about these ties' type, gender and when and how they met. This analysis will be introduced in Chapter 7 to support the qualitative findings that explore the structural characteristics of the participant's network.

b) The number of ties does not necessary reflect the full size of the participant's network.

In addition, she was still developing the firm's brand and logo, a reflection of the immaturity of the business side. This was demonstrated when she commented:

*'A month ago, I have got my biggest projects since I started, the biggest project in terms of the client name, the project cost and the profit. So, this money will be put back into developing the company in terms of branding and logo'.*

The firm had reached the first sales and hire; however, the founder was still working on the firm's structure, brand and logo at the time of research the interview.

The female entrepreneur's network comprised mostly of business ties with other entrepreneurs, managers, CEOs and freelancers. She also had few ties with family members and previous work colleagues. Her clients' ties had been created through word of mouth, where business ties and some clients played a role. The networking events, including competitions, seminars and conferences were her main access route to her business ties. The description of her network ties generated 40 ties that she described and had enough data to identify the tie's type, gender and when and how they met. It appeared that her prior business partner had a limited role in network building. This was reflected in a comment on her experience as a female technology entrepreneur in Jordan:

*'My ex-business partner, he used to tell me that I think we're getting clients and people are getting to know our business just because there is a female entrepreneur in the business and it's like this in Jordan'.*

**Case F3:** The female entrepreneur owns a digital content firm. Previously, she had experience of working at another firm in a relevant field in which she established her own business. She started as a sole entrepreneur and only founder of the business. It appeared that the founder was working on her business idea before the formal date of firm registration. She commented:

*'Before I officially registered the company, I did several tests and experiments ... I actually started the research and testing of the product around nine months before moving ahead'.*

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At the time of registering the firm, the female entrepreneur approached a business accelerator, from which she gained start-up seed support.

The female entrepreneur's firm was about two years old, having been started in September 2011. A year after start-up the founder had hired the first full-time employee. Three months after the first hire she had made her first commercial sale. Thus, after about a year and three month from the start-up, the major challenge of her firm had become production and selling in volume. She stated:

*'Clients, it's very difficult to get in touch with them and get them to spend, because it's not as easy as it seems. There are Mafias out there and there are filters and sometimes you have to go through agencies and everybody wants their cut, so selling is not easy'.*

After the first sales, three main investors had joined the board of management of her business: two angel investors and one venture capitalist. The networking events gave her access to two investors. She had met the first angel investor in a technology event, and then he helped her to reach the second angel investor. The venture capitalist was initially reached through a network event of one of the accelerator's angel investors.

The female entrepreneur's network comprised mostly business ties and very limited ties with family members, friends and previous work friends. Her business ties included mentors, other entrepreneurs, managers, CEOs, investors and firms within the industry. In accessing these business ties, the accelerator, the local and regional industry networking events and some newly built business ties, played an important role. Also her network had some ties that reached through her first angel investor including connections with professionals and some other companies within the market. The second investor and the venture capitalist company were new members of her firm's management board by the time of the interview. Thus, their role in connecting her with new actors was not yet clear. Of the ties that she described, 40 dyad ties had enough information to identify the tie's type, gender and when and how they met.

**Case F4:** The female entrepreneur owns a digital content firm. Initially the founder self-funded from personal savings. Previously, she had many years of experience working at different managerial levels in different organisations and in an unrelated industry. This entrepreneur started her business with another member; however, the female entrepreneur was the main founder of the business idea, and the only person involved in the business. The other member's role was symbolic as establishing a limited liability company requires at least two members. She commented on the role of her partner in building the business in the following way: *'Effort zero, really, he has his own company, he works in his own company and he doesn't want any more headaches'*.

The female entrepreneur's firm was about seven years old, having been started in 2006. She had owned and operated a previous business in the ICT sector before she switched to start a digital content firm. She stated: *'We started as a service company, not a product-based company ... in 2006, as an entrepreneur, I decided not to go into consultancy any more ... so, we switched'*.

The new business, on which the current research is focused, was started in 2006 and she had hired the first full-time employee in the early days. However, the development of the product, first sales and the first significant investment were in 2007, a year after the start-up. Then the founder's focus was on developing the other products; dealing with the marketing and sales challenges; and finding investment to grow the business. In 2010, the firm had finished developing the product range and had received a growth investment, she stated: *'The first [product] in 2007 and then in 2008, 2009 and 2010 we developed all the rest'*.

After the start-up, two investors joined the management team. However, the female entrepreneur was the main person involved actively in managing and running the business. The first investor, whose main role was in developing the product, joined a year after starting up. The founder's comment reflected this:

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*'She's really helped in the development side, I mean, on the development side of the business, not the marketing and the business development. She had a lot to do with the product development ... she was our main researcher'.*

The second investor had joined the company about three years after starting up; this investor had an important role in bridging a gap to reach the market. She stated: *'He is in the sector, and introducing us to some of the people was vital and important'.*

The network of this female entrepreneur included several ties with previous work acquaintances and new business ties. She had some ties that were carried over from her previous work and which helped in marketing and facilitating access to financial support and human resources. Although the description of her network ties generated 14 ties, this female entrepreneur had extensive network ties built through her previous experience in different organisations. However, these ties were mostly latent ties, activated only when she needed them.

**Case F5:** The female entrepreneur owns an engineering consultancy firm. Previously, the female entrepreneur had worked as a freelancer in the same field in which she established her own business. This firm was founded by her as a sole entrepreneur, had not receive any investment and she was still working as a sole founder at the time of the interview. She was an independent entrepreneur as she had not been involved in any incubator or accelerator.

This female entrepreneur's business was about a year and a half old, having been started in December 2011. The founder made her first business sales and first full-time hire from the early days of starting up. The female entrepreneur had a large network of freelancers in most Arab countries. However, it appeared that she was still working on the service research and development. This was apparent when she commented on her relationship with a mentor whom she had met for the first time in July 2013, a month before the research interview. She stated:

*'He said, if you take one project now, you will lose a month of organising your business ... he said don't take projects now and contact [a programmer] and start to work on structuring your business'.*

Also confirmation that the business service was still under development appeared when she stated: *'Last month I have got twenty thousand dollars as an award from [firm], this money will help me a lot now in developing my online platform'*. In addition, she was still discussing start-up issues such as financial and sales management, legal issues, copyright, and the business structure. It was also apparent when she stated:

*'My mentor ... he gave me a very good general idea about all these things, but I didn't do that, no ... but maybe because the priority... I have something more important now relating to my platform'*.

Thus, the founder of this firm had reached the first sales and hire stage; however, the founder was still working on the firm's structure, copyright, brand and logo at the time of research the interview.

The network that she relied on and used through her business formation process included very limited family members and friends. Her network was comprised of business ties with a large number of links with engineering freelancers. She had started to build on these ties online a few months before she registered the firm. Her network also included ties with other entrepreneurs, some managers, CEOs and mentors. The networking events, including international and national competitions, seminars and conferences were her main access to these business ties. Her clients' ties had been created through word of mouth, where her clients' ties played an important role. As this female entrepreneur was working as a freelancer in the same field, some of her old clients also helped her to access some new clients. The description of her network ties generated 20 ties as described and provided enough data to identify the tie's type, gender and when and how they met.

**Case F6:** The business was founded by two female entrepreneurs. Previously, both of them had work experience in related fields in where they had established their own business. Their business had started out as a lifestyle business that was not the main focus of the founders at the time. One of them commented:

*'We worked part time from home, it was very simple, very small and very, very slow. The business started off as a lifestyle business and then after five or six years it became a proper company ... I had another job because this business wasn't paying off. So, I was working in another job while I was doing this and then when the business started to pick up and become more revenue positive we decided to take this to [accelerator X] and take it to the next level' (F6a).*

Although one of them was main person responsible for managing the firm, both of them were active in building the business.

The firm was about eight years old, and had started in June 2005 by producing electronic publications. The founders described the first six years of the life of the business as dominated by high informality. One of them commented:

*'When we started, we didn't, it was a different business than the others, we didn't think about it as a business. We thought about it as a project, like, fun, like, let's try the first this, let's collect money, it didn't cost that much, it was just to sell and as a pastime, then we felt that there was good demand ... when we felt that this idea has good demand, so, we started to take it a bit more seriously' (F6a).*

This firm had added a new product stream onto the business model, creating digital content in 2011. From this point onwards, they introduced a more formal structure and strategic orientation into their business. Thus, in 2011, the commitment of the founders to the business increased as a business rather than as life style venture. One founder commented: *'In 2011 we went to [accelerator X] ... the people who gave us more structure were [accelerator X]' (F6b).*

This new direction and digital focus, which the firm had taken in 2011 represented a new start-up stage of the business. Effectively, the founders had gone back to performing 'start-up' activities, including developing the digital business idea, developing the business plan and financial plan and seeking funds to support this new direction. In 2012, the founders had hired the first full-time employee since it started. Few months before the first hire, the founders had received two investments into their business. After obtaining the two investments and achieving greater formality in the

business structure, the main focus of the firm had become marketing and selling in volume. F6b stated:

*'The thing is like- that we're now at the stage where, we've just been given money in January ... so, there is a lot of pressure on us now to sell. This is all we think about, it's just making revenue and selling'.*

What was evident in these female entrepreneurs' networks was that both had largely brought similar types of ties to the firm. One of them commented on the other's network as: *'[the female co-founder] has a huge number of connections, so, I would imagine it's both, personal network and it's a professional network' (F6b)*. As the analysis of the network characteristics of these two female entrepreneurs indicated a high degree of similarity between their networks, the findings of this case, in Chapter 6, 7 and 8, will be presented as one rather two separate networks.

The network of those female entrepreneurs included several ties with business, personal, business and market ties. Their network ties were the only ones in the research sample that included a good number of family members, whose support was utilised particularly during the first five years. Indeed, their network ties included very limited numbers of friends and previous work colleagues. They accessed some business ties through the accelerator, including mentors, other entrepreneurs and firms within the technology industry. The role of their two investors in connecting them to other actors was very limited. A comment reflected this: *'They're not very involved, I mean, we sent them monthly a board report and we have a board meeting four times a year- sometimes they attend sometimes they don't' (F6a)*.

Of the ties that they described, 32 dyad ties (14 ties for one of them and the rest for the other) had enough information to make an identification regarding the type of ties, gender and when and how they met.

**Case F7:** The female entrepreneur owns an ICT consultancy firm. She had many years of experience at different managerial levels within international agencies in a related industry in Jordan. She was an independent entrepreneur that is, she had not been



involved in any incubator or accelerator. Her firm was about six years old, having been started in 2007. She started with a venture capitalist company. However, after three years of the start-up, she ceased working with finance from this investor and was able to buy more shares and increase her ownership of the firm. She also had managed to bring a new business partner into her company.

The business of this female entrepreneur was a long-term service-oriented project, characterised by a robust start-up stage as the co-founder had a strong financial and human resources. In addition, the founders had worked on the first project before registering firm, she commented: *'We started with the large number of the employees, because we started working to build this company before we even registered it, ok. So, when we earned the first project we established it as a company with around six staff members'*.

This firm was the only firm from the research sample where the female entrepreneur's ownership at the start-up was less than fifty per cent. Thus, the co-founder at the start-up of the firm, which was a well-established company, was the main owner. However, the female entrepreneur was the only person actively involved in the business and had founded the business idea. She stated:

*'I created this business idea. I have a 30 years' experience ... I wanted to do something that is project related, because I like to create my projects, long term projects, something that has to do with my passion ... so, this is why I quitted my ... and I started looking for this kind of opportunity'*.

Although the female entrepreneur had a strong start-up venture with many years of experience and financial support from her business partner, her main concern in the early years was with developing the service. As she put it:

*'During the start-up stage my main concern was to understand the solution we are offering. It was mostly that I need really to educate myself and to understand that what I'm doing is proper fit, because it was not something that I used to do or I fully understand. It was mostly educational for me and my team, to make sure that we understand what we are doing'*.

The firm moved through a transition point in 2010, when the female entrepreneur ceased working with the start-up business partner, and another business partner joined the firm. After 2010, this female entrepreneur had modified her business model and started to provide new kinds of service, which were appropriate to the new financial situation of the firm. It made its first sales and hired the first full-time employees in the early days of starting up.

The network of this female entrepreneur included several ties with business actors and previous work acquaintances. She was the main networker for the firm since starting up; the range of actors in her network was the main motivation of the co-founder in approaching her. She stated:

*'Actually they did not help me with the network, I helped them with my network and this is why came to me, because I do have a good network of companies and suppliers'.*

She had many ties carried over from her previous work that facilitated access to information, advice and business partnerships.

Although the description of her network ties generated 14 ties, this female entrepreneur had extensive network ties built through her previous experience in different organisations. However, these ties were mostly latent ties and were activated when she needed them. She claimed: *'Never really had a problem of finding any resources to be honest with you ... in every step of the way there were people helping me with something.'*

**Case F8:** The female entrepreneur owned a web services firm. Previously, she had work experience at different managerial levels in the same field in which she established her own business. She was an independent entrepreneur with no involvement with any incubator or accelerator. She started with a business partner; one of her acquaintances. She commented:

*'In 2006 we met and we decided, I left the company that I used to work with and we discussed alternatives, I wanted to open a business of my own and he*

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*said, he needed a company focused on ... so, we started the company in that way, 50, 50 ownership and we started ... basically in 2007'.*

The female entrepreneur still works with same founder and has not received any investment. This female entrepreneur was the only one actively involved in managing and running the business. She stated: *'I always hire and fire people and do everything, he had his approach'.*

The female entrepreneur's firm was about six years old, starting in June 2007. She had worked on the first project even before formally registering the firm, and for which she had the first commercial sales and hired the first full-time employee in the early days. Her business is a project-related service and the sales in the first three years were influenced by business which came through her business partner's firm. She stated:

*'We worked very closely for the first three years. So, I had this firm and I worked also part time in his company to help him manage it ... I have few business friends that also connected me to others who gave us work slowly, then we got a little independence my partner's company'.*

This shows that the business of the female entrepreneur was working as a complementary service to the business partner's firm, where his clients ended up using her service. She stated:

*'We started very small with no capital investment and because of the relationship with this other company we had an influence on development and work coming the company's way, contracts, they contact us to do the technical development, so, it was difficult to start'.*

Thus, three years after the start-up the transition step in business life was accomplished when she made the first sales without the influence of her business partner's firm. Her clients' ties had been created through word of mouth, and her business partner and some business friends had also played an important role. She described her business partner as important at the start-up stage as follows:

*'Basically, I was introduced to his network, I mean the clients ... he opened his contacts and I have my contacts also ... I have a few business friends that also*

*connected me to others who gave us work slowly, then we got a little independent of my partner's company'.*

The female entrepreneur's network comprised business ties including mainly other business owners, firms within the industry, professionals and some competitors. These ties were accessed either directly or through her business partner and the newly acquired business friends. Ties with family members and other relatives did not appear in her network. In addition, although her business was located within the same industry where she had previously worked, her network had limited ties with previous work colleagues. She commented:

*'Basically I disconnected from them ... I don't think that they helped me at all, it's not like they did not help me, I did not ask for any help from them ... I didn't need to, I don't why, they were just employees'.*

However, she would have been able to reactivate these connections as required since she still has good relationships with them. She stated:

*'But if I needed something they would help definitely ... we don't communicate that much, but generally, I have good relationships with lots of those people that I knew or I worked with or were old colleagues and they're now competitors'.*

Of the 14 dyad ties that she described, there was enough information to identify the tie's type, gender and when and how they met.

**Case F9:** This founder had previous experience of working for private companies. Also, she had owned and operated a business outside the technology sector, and was still active in running it. Her current business, in which this research is interested, was a digital content firm. This firm was about two years old, starting in 2011. She started as a sole entrepreneur, when she approached an accelerator and obtained seed funding for her business idea. A few months after the start-up and through the accelerator angel network events, she obtained two angel investments. The female entrepreneur had developed the nucleus of the working team, five months after she started, by hiring the first full-time employee. Although the founder developed the product, which ready for

the market, she had not made the first commercial sales. Therefore, the founder finished the product development, introduced the product into the market and by the time of the interview, had moved her focus onto marketing and sales.

The female entrepreneur's network comprised mostly business ties and, other than a few family members, her network had no personal ties (friends and previous work colleagues). This female entrepreneur had an extensive network of ties built through her previous businesses and as a board member in some organisations. However, other than a group of suppliers, these ties were mostly outside the technology sector and of no immediate benefit to her digital content firm. These ties may, however, represent latent ties that could be activated as needed.

The accelerator was her main access to the technology industry, whether firms, professionals, expertise or other technology entrepreneurs. Her participation in networking events, seminars and conferences played an important role in accessing many business ties that were a source of information and advice. Her network included some ties through one of her firm's investors. Of the ties that she described, 15 dyad ties had enough information to make an identification of the tie's type, gender and when and how they met.

**Case F10:** This founder had some years of prior experience working for another company, and had owned and operated two businesses in an unrelated industry. She was still managing and running one of these businesses. The female entrepreneur's business, in which the current research is interested, was a digital content firm that was about two years old, having been started in 2011. She started as a sole entrepreneur and founder. She was still working as a sole entrepreneur, without a management team or any investment at the time of interview.

At an early stage, the female entrepreneur approached a business accelerator, from which she obtained start-up, seed funding. Six months after the start-up, the firm had made its first commercial sales and about six months thereafter she had hired the first full-time employee. About a year after the start-up, the founder's main interest turned

to producing and selling in volume and searching for companies within the market with which she could maintain and build business collaboration. She stated: 'I tried to contact an international company, but I couldn't reach them. It was something good for the company to be associated with them'.

The female entrepreneur's network comprised mostly business ties and other than two family members, her network had no other family members, friends or previous work colleagues. This female entrepreneur had good network of ties built through her previous businesses; however, these ties were mostly outside the technology sector and so she did not benefit from or use them in her digital content firm. Thus, these ties may represent latent ties that could be activated when she needed them.

The accelerator was a main gateway for this entrepreneur to gain access to the technology industry and build contacts with firms, mentors, expertise, resource providers or other technology entrepreneurs. A large number of her network ties when starting up, were accessed through this accelerator. Her participation in networking events played an important role in helping her to access many potential clients as well as business ties. In addition, she was a member of a networking platform that facilitated access to some further ties. The description of her network ties generated 20 ties providing sufficient information to identify the tie's type, gender and when and how they met.

**Case F11:** This female entrepreneur owns a digital content firm. Previously, she had experience of working at other firms in the same field in which she then established her own business. The business was about two and a half years old, having started in January 2011. This business was founded by two entrepreneurs, the female entrepreneur herself and one of her family members. Both founders were actively involved in managing and running the business.

The founders' commitment to the business idea had started some months before the business was formally registered. She commented: '*We started in 2010, but we did not register the company up until January 2011*'. At an early stage, the founders

approached an accelerator and obtained seed funding for their business idea. Five months later, they had made their first commercial sales and hired their first full-time employee, simultaneously, acquiring their first angel investment. The founders' main focus then shifted to marketing, producing and selling in volume, after which they succeeded in selling to more than eight major companies in Jordan and the region.

In building relationships, her co-founder played a role in bringing many connections to the business. In addition, the founders gained access to some ties through the accelerator that included mentors, other start-ups and through networking events. The angel investor, found through participating in the accelerator angel investor events, had also provided access to some ties that mainly included potential clients.

The female entrepreneur's network was comprised mostly of ties with other entrepreneurs, mentors, managers, CEOs, professionals (consultants, freelancers, authors and academics). She also had some ties to research through her business partner. She had few connections with previous work colleagues; also other than her business partner, her network had no other family members and friends.

Some of her clients had been accessed through her network ties; in addition, participation in networking events played an important role accessing many potential clients as well as business ties. In addition, she was a member in two non-profit organisations, and through volunteering events she accessed many potential clients either in Jordan or the other Arab countries. The description of her network ties generated 47 ties and had enough data to identify the tie's type, gender and when and how they met.

**Case F12:** The female entrepreneur was a founder of a digital content firm. Previously, the female entrepreneur had work experience outside the industry in which she established her own business. She was the sole entrepreneur and founder. At the time of interview, she still worked as a sole entrepreneur, without a management team and or any investment.

This firm started in the summer 2010, was about three years old. A year after searching and developing the business idea, she approached a business accelerator and had obtained a seed investment for her business idea. Four months after obtaining the seed fund investment, the founder had hired the first full-time employee, and four months later, achieved her first commercial sales. After about a year and eight months with the seed funding secured, the business idea developed, the first employee hired and the first sales made, her main interest focused more on marketing and volume sales.

The female entrepreneur's network comprised mainly other entrepreneurs, professionals and freelancers within the ICT sector that were accessed via the accelerator. Her network had included a group of freelancers in the education sector, were they directly connected online. Her network contained two family members, some friends and previous work colleagues. Her network revealed many unconnected actors providing access to knowledge, information and advice in particular. She stated:

*'I can't find what I want ... I can't find someone can help me ... I am sure, for example, that if I had got a person's experience in business, he would save me a year of searching'.*

Of the ties that she described, 15 dyad ties had enough information to make an identification with regard to the tie's type, gender and when and how they met.

**Case F13:** The female entrepreneur owns a digital content firm. Previously, the female entrepreneur had worked as a freelancer and had experience of working at other firms in a relevant field to the business she established. She was an independent entrepreneur operating without support from any incubator or accelerator. She started the business with another business partner, a member of her family. In fact, this female entrepreneur was the main founder of the business idea and then selected one of her family members to approach as a business partner. She stated: *'He has huge experience in marketing and business development. This was one of the main important reasons to select him to be my business partner'.*



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She was still working with the same business partner at the time of the interview and no new members have joined the management team. Both were actively involved in managing and running the business, where each of them had main responsibilities in the firm. She stated: *'The effort should be distributed ... he is in the business development side, this is his work and I work mainly on the technical and content development side'*.

The business was about two and a half years old, having been started in January 2011. Her commitment to the business idea had started some months before the business was formally registered. During the first nine months, the firm had significant sales after launching the first content, which was a mobile app. A year after starting up, the business required a more formal strategic orientation by aiming to serve the target market with new products and services in order to maintain business growth. She commented:

*'A year after the start-up, we introduced a new service. Now, we found after we have started that there was a huge interest in education, so, we felt that we should divide our directions to have more focus ... so, now we provide a service. This came as a natural growth ... we try to calculate our steps to ensure the sustainability'*.

After one year of the start-up, the business's main interest was marketing and attracting more customers, to sell in volume.

The female entrepreneur's network was comprised mostly of ties with business owners, managers and professionals (consultants, bloggers, artist, authors and academics). She also had some ties reached through her business partner. Other than her business partner and a few friends, her network had no other family members and previous work colleagues. Some of her clients' ties had been created through word of mouth, and relied on her professional contacts. The networking events including conferences and networking platforms helped her to access some business ties.

The description of her network ties generated 30 ties that she described and had enough data to identify regarding the tie's gender and when and how they met. In building a

network, the female entrepreneur's business partner was playing a role in bringing connections to the firm. What was noteworthy in this case is that most of the ties with the clients and with firms within the industry, came directly with an interest in the firm as a firm rather than in the founders as individuals. She commented on this:

*'We participated on an exhibition and it opened to us some connections, now those people, [business partner], he knows them, but the relationship started with them based on their interest in the firm as a business not because they know [business partner]'.*

**Case F14:** The final case was a founder of a software firm. This entrepreneur started her own business after having had some years of experience working in the same industry and at different managerial and non-managerial levels. Her business was four years old, having been started 2009. She made her first commercial sales and hired her first-full time employee about two years after start-up. During these first two years, she had worked on developing the business idea and completing the market analysis, and had made some sales for product development and achieved the first commercial sales. After the initial two years, her main interest moved into marketing and selling in volume. At this point, she started searching for and collaborating with strategic partnerships within the market to push up the sales.

The female entrepreneur' started with one of her family members; however, the female entrepreneur was the main founder of the business idea and the only person actively involved in managing and running the business. The other member's role was limited to some technical help at the time of start-up. She stated:

*'As a helper, simple things, he is an IT person and he was a partner in the company when I started ... now, he is still as a business partner, but in terms of work, no, nothing'.*

The female entrepreneur's network included business ties especially with different business support organisations. Her firm was incubated in two business organisations through which she was able to build her network with mentors, other business support organisations and other entrepreneurs. She had few connections with previous work

colleagues. Her network, two years after starting up, included more market ties with clients and firms within the industry. The description of her network ties generated 20 ties with sufficient data to identify the tie's gender and when and how they met.

#### **5.4 Network development through the business stages within all cases**

The cases for this study were chosen based on a purposive sample. Building on Reynolds and Miller's (1992) work, the research attempts to use the first sales and hire of staff as markers to define and differentiate between the start-up and early-growth stages of the firm. The main purpose of using these indicators was to explore the development process of the participants' network ties through her business development from start-up into the early-growth stage. The aim was also to identify firm at broadly similar stages of development in order to explore and understand the networking behaviour and network development among the aggregate group of female entrepreneurs.

For those studying the business development process, Reynolds and Miller's (1992), Kazanjian and Drazin (1990) and Ruhnka and Young (1987) found a group of business activities and characteristics, in addition to the first sales and hire markers that help to differentiate the firm's development stages. The business development characteristics that appear to differentiate the start-up stage include business idea development, product/service development, seeking the first funding and start-up intellectual resources (such as copyright and firm registration, logo and brand name) (Kazanjian and Drazin, 1990; Ruhnka and Young, 1987); and finally, recording the first sales and (or) first full-time hire (Reynolds and Miller, 1992). The characteristics and activities differentiating the early-growth stage include marketing and sales in volume and some formality in the business structure (Kazanjian and Drazin, 1990; Ruhnka and Young, 1987).

Using the first commercial sales and hire of the first full-time employee in this research helped to define the research sample. However, adopting these indicators to define the participants' network development process from start-up into the early-growth stages,

was difficult given that the research cases showed variation in terms of the time at which these markers happened. For example, although some firms had reached these markers early in the life of their business, they were not developing in other areas of the business such as the development of the business idea, market research and structure. This suggests that the behaviour of these female entrepreneurs and the activities in which they were involved still indicated being in the start-up stage.

Some dimensions which appeared to influence the business development stages include: 1) type of the firm (the cases included services and product-oriented); 2) firms' goals for growth (some firms had modified their business models during the firms' development). For example, the research included three service-oriented firms; these firms had made their first sales and hired their first full-time employee in the early days following start-up. In addition, the research included three firms that had a new focus and had modified their business models during the life of their business.

This generates variety among the cases in the period of time before and after achieving the first sales and first hire of full-time employee markers. According to these markers, the duration of the start-up period of some cases was a few days where as for some of others, it ranged from around ten months to seven years. The duration of the early-growth stage across cases ranged from ten months to seven years. Thus, the use of first sales and first hire as an indicator for differentiating between business development stages and for understanding the development process for their network was difficult in some cases. Therefore, in understanding the behaviour of networking and network development processes of the participants, as explored in Chapters 6, 7 and 8, care will be taken to apply a much more finely-grained analysis in this research. This analysis will examine activities in which participants were involved and identify the extent to which they were representative of the start-up phase or the later one that was more growth-oriented. This allows the researcher to link the network structure to the stage of development and explore the female entrepreneur's network structure and type of content at each stage in the development.

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Building upon this, this research suggests that ties were built and used while these female entrepreneurs were developing the business ideas, business plan and market analysis, undertaking product/service development, building a working team, reaching out for and obtaining start-up advice, accessing financial and intellectual resources. Ties intended to undertake these activities were identified as start-up ties. Network ties developed and used while these female entrepreneurs were searching to promote and increase sales, to secure investment for growth, to create business collaborations and develop more structure in their business, were identified as early-growth ties. Table 5.3 illustrates the start-up and early-growth stage markers distinguished in this research. Following on from this:

- Four firms, F1, F2, F5 and F9, appeared to demonstrate activities typical of the start-up firm, when an analysis of the complete research interview transcripts was undertaken. Therefore, the networks of these firms will be considered and analysed as start-up networks only.
- Ten firms appeared to demonstrate characteristics of the start-up and early-growth stage. Therefore, the network of these firms will be considered and analysed as start-up and early-growth networks.

### **5.5 Summary**

This chapter has provided a brief description of the cases featured in the current research. This description has covered the female entrepreneur's background (the female entrepreneur's age at business start-up; education level and subject; nature of past work experience and parental background) as well as the type of technology, firm development stages and network ties possessed by the firm. The above discussion represents the foundation for understanding the research findings. The following Chapters, 6, 7 and 8, will present and discuss the research findings and models that emerged from the cross-case analysis, in terms of the development of the participants' network structures and their contents.

**Table 5.3: Markers to distinguish the start-up and early-growth stage**

<b>Firm's stage activities</b>	<b>Illustrative quotations</b>
<i>Start-up network ties</i>	
<i>Business idea development</i>	'I talked to him about my business idea. He was very supportive and he helped to put thing into perspective' (F3).
<i>Product research and development</i>	'He helped me through his center to build the first and second prototype' (F1).
<i>Build working team</i>	'I recruited him before, and then he helped me to get [X] in last October and she helped me to get [Y]' (F10).
<i>Securing first initial funding</i>	'I won the [X] competition and we got the first funds from this competition, and then we got started' (F1).
<i>Start-up knowledge (advice on registration, logo and brand)</i>	'They helped me out with certain aspects, like questions about registering the company, about the capital, about how to setup and about branching out' (F8).
<i>Start-up support (e.g. office)</i>	'My father gave us this flat, so, I didn't have to pay anything, no rent, electricity, internet, we didn't pay him anything' (F2).
<i>Early-growth network ties</i>	
<i>Marketing and sales</i>	'They helped us in marketing partly our product. Now they are helping us in marketing our [X] product ... by inviting us to some of the events ... Or, by directly funding some of our marketing campaign' (F4).
<i>Firm evaluation and investment</i>	'[X] gave us some advice on the investment, firm evaluation, we sat with him more than three times' (F13).
<i>Build business structure</i>	'They just helped us in organising our growth structure and in setting milestones and achieving them, and expectations, and how to bootstrap and how to have the lean start of model' (F6a).
<i>Build market acceptance</i>	'At this conference we got to know many people from the Gulf and the important thing is that they got to know our firm and its name. That was enough for me' (F11).
<i>Follow-up product/service</i>	'The first product in 2007 and then in 2008, 2009, 2010 we developed all the rest' (F4).

## **Chapter 6: Structure: The characteristics of the female entrepreneur's network ties**

### **6.1 Introduction**

Framed from the perspective of resource acquisition (Pfeffer and Salancik, 1978) and answering calls for the clarification of the qualities displayed by the female entrepreneur's network (Hampton et al., 2011), this chapter, thus, is to establish the background for achieving the research objective: understanding how female entrepreneurs' network ties in Jordan develop through time to provide advantage in resource acquisition during the development process of technology-based firms. This chapter provides the basis for the next two chapters which explore the development process of the network structure and its content. Based upon the research data, this chapter will discuss the structural dimensions of female entrepreneurial networks in 14 technology firms in Jordan. This chapter will, then, discuss how the structural dimensions of their networks were classified and identified, using illustrative quotations throughout. This facilitates a better understanding of the data analysis process that explores the development of the female entrepreneur's network structure and its content, as presented in Chapters 7 and 8.

### **6.2 The structural dimensions**

The structure of the entrepreneur's network includes the aggregation of ties (either firms or people) and the links between these ties (described as dyads) (Wasserman and Faust, 1994). This structure reflects the entrepreneur's position within the network (Burt, 1992), which points to the extent and range of resources that can be reached through such network relationships (Moran, 2005; Borgatti and Foster, 2003). From this perspective, network structure enables one to explore the ways in which an individual's behaviour is influenced by his/her network ties, and the individual's ways of utilising these ties to reach a specific goal (Granovetter, 1973).

Several structural dimensions within the network-based literature have been employed to describe the presence or absence of the relationships between the network actors

(Hoang and Antoncic, 2003). One of these dimensions is more relevant to the type of actors with whom the entrepreneur has exchange relationships (Witt et al., 2008). Thus, an initial aspect of the network structure is its diversity, reflecting the variety of resources that entrepreneurs can access through ties with different type of actors (Hoang and Antoncic, 2003). A network's value is increased by being comprised of both weak and strong ties (Dubini and Aldrich 1991), enabling entrepreneurs to exploit the benefits accruing from both types (Uzzi, 1996) and, thereby, creating distinctive content in their network relationships (Batjargal 2010; Capaldo, 2007). Therefore, access and reliance on a good ratio of strong to weak ties emerges as a second structural dimension of the entrepreneurs' networks (Hoang and Antoncic, 2003).

The entrepreneur's access to the required resources through network ties increases through securing access to resource providers to whom they are not directly connected (Dubini and Aldrich 1991). In these circumstances, the accessibility of the entrepreneurs is enhanced when they can secure a path to the requisite actors (Aldrich, 1989). The third aspect of the network's structure is the entrepreneur's network reachability, and reflects the existence of paths between two unconnected parties of actors within the network (Aldrich 1989). In addition, and due to advantage that might be secured when the entrepreneur's network ties know each other, the fourth structural aspect reflects the extent to which the entrepreneur's network ties are known to each other and work together (Wasserman and Faust, 1994).

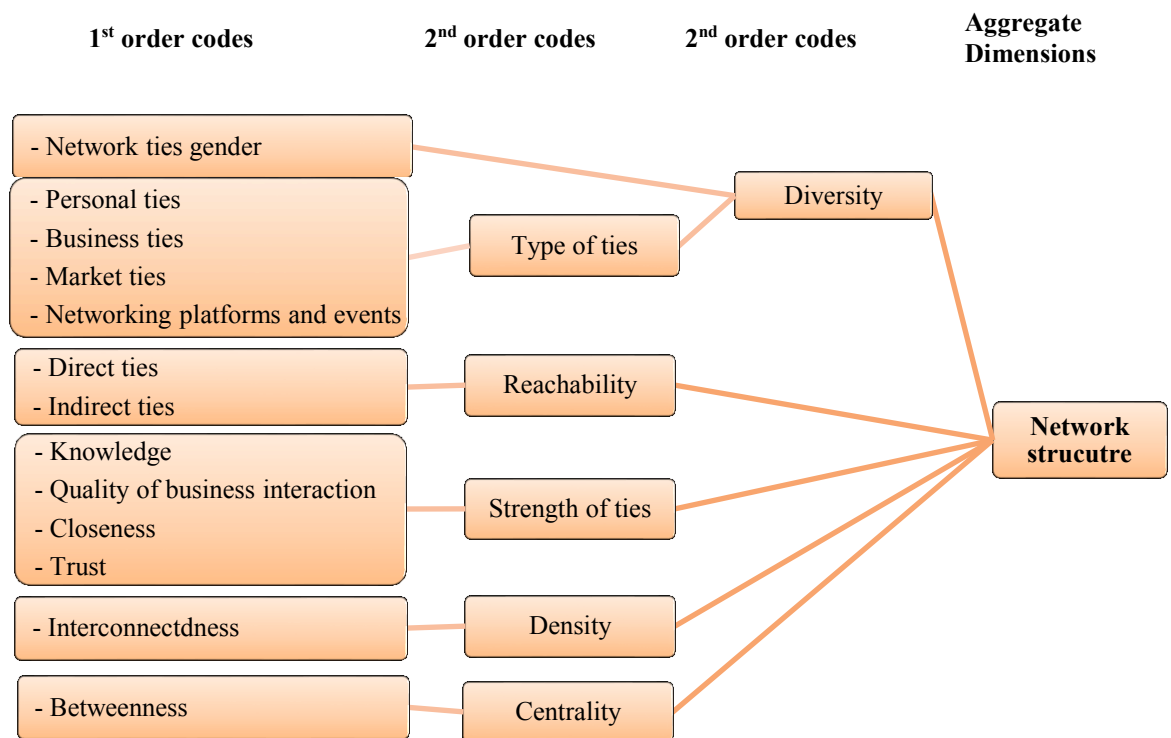
Building a valuable network is also a function of the position that the entrepreneurs have within the networks (Aldrich, 1989), enabling them to act as a broker between two other actors within their network (Freeman, 1979). Therefore, the final dimension of the network's structure is the extent of the central role played by entrepreneurs within the network, thereby securing more valuable information and strategic position advantage. (Gulati et al., 2002). Thus, the aspects or dimensions evident in the literature that count as indicators of the structure of the network ties are: diversity; strength of ties; density; reachability and centrality.



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Through an analysis of the qualitative research data, based upon the structural dimensions, the network ties of the female entrepreneurs' in this study were defined by using the interviews as a source from which to derive understanding and classification of their network connections. The foundation for explaining the structural dimensions of the participants' networks, is provided by the analysis of the participants' descriptions of their networks, at both the level of dyadic ties and the aggregate level. Thus, the first challenge involved the identification and classification of the structural characteristics of the participants' networks, through the data reduction process. During the analysis process, coding of the interview texts was undertaken to identify and clarify these characteristics. Thus, the analysis, within and across cases, generated a group of themes, which reflected the characteristics of the structural dimensions of the participants' networks, including network diversity, strength of ties, density, reachability and centrality, which are highlighted in Figure 6.1. The next section, then, explains these themes.



**Figure 6.1: Research structure themes: network structural dimensions** Source: Researcher

### 6.2.1 Network diversity

The diversity of an entrepreneur's network reflects the degree of variety within his/her network ties (Witt, 2004) and depicts the extent of resource variety that is available to the entrepreneur (Aldrich, 1989). Entrepreneurs with diverse contacts to ask for advice, help and resources are considered to be more valuable to their businesses (Witt, 2004; Hoang and Antoncic, 2003; Aldrich, 1989). To determine the diversity of the entrepreneur's network, studies have used types of relationships with actors (Witt, 2004) and the gender of those actors (Hampton et al., 2011).

Based on the descriptive elements in the data, the participants' descriptions of their network ties enabled the researcher to explore their network ties' diversity. This description made it possible to learn about the gender of the ties that they were connected with. For example, F2 commented: *'I was talking to many entrepreneurs, ladies ...but most of them were guys'*. Moreover, some expressions helped with the clarification of ties according to gender, including: *'He is a really smart man'* (F1); *'she guides the graphic designer here'* (F6b); *'this is how I got him'* (F7); *'he has his own business'* (F12).

The other indicator identified within the data as a good tool for defining the diversity of the participants' networks, was the type of connections that they had with their ties. To explore diversity in terms of the type of ties, researchers have classified entrepreneurial network ties into different groups such as family, friends or acquaintances (Witt, 2004). The data showed that the participants obtained resources and help from different actors such as friends, other entrepreneurs, mentors, managers, investors, clients, professionals and business organisations. For example, F3 identified the type of her tie with a business owner as a client: *'There is a websites called [X] they buy content from us'*. F10 defined the type of tie that linked her with business owners as mentors: *'My mentors ... who run their own businesses'*. F12, also, described her relationship with a freelancer as her mentor: *'He is a freelancer ... I deal with him as a mentor'*. In this way, the characteristics of the ties, in terms of gender

and function, provide the foundations for exploring the degree of diversity within the participants' networks.

### 6.2.2 The network reachability

Network reachability exists when there is a pathway linking the entrepreneur, through his or her network ties with two otherwise unconnected actors (Dubini and Aldrich 1991; Aldrich 1989). From this perspective, the analysis process involved identification of the actors who acted as a broker for the participants. Analysing how the participants were introduced to network tie, gives an indication as to the main pathways that the participants used to reach other actors. This enabled the identification of actors who were directly or indirectly linked within the participants' networks.

Direct ties are those actors with whom the female entrepreneurs have a direct dealing (Aldrich, 1989). Participants used some expressions which made it possible to learn about these direct contacts, for example: *'I contacted him directly'*; *'those people who I had met in ...'*; *'I met this person in ...'*; *'she sent me, like, I'm interested'*; *'I contacted them'*; *'I called someone'*; *'I introduced myself to ...'*; *'direct, through my previous work'*; *'he is an old colleague, through work'*.

Indirect ties are those with whom the female entrepreneurs became acquainted through other actors (Aldrich, 1989). Some illustrative comments included: *'Through his network'*; *'who introduced us to'*; *'through my connection'*; *'they hook me up with'*; *'they connected me with ...'*; *'they put me in touch with ...'*.

These indirect ties originated from the direct or indirect ties that facilitated access to a third party. Data revealed that introductions to the participants' network ties derived from four main sources:

- 1) Introduction through business ties with other entrepreneurs, CEOs, mentors, support organisations, business partnerships, other firms, professionals and business partners. For example: *'If there is someone who introduced me to*

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*more people and facilitated networking it was the [X] incubator, it was the management of [X] incubator' (F4).*

- 2) Introduction through the personal ties, for example: *'My friends once they brought me trainees. My friends helped me also to attract trainees when I was looking for trainees' (F2).*
- 3) Introduction through the market ties such as clients and distributors. For example: *'They refer us to other persons, yes, we have like three or four clients who do that' (F8).*
- 4) Introduction through networking platforms and events. Such introductions were considered a direct pathway in building networks. However, some events were interpreted as an indirect network, given that the female entrepreneurs gained access to these events through other actors in their network such as organisations, for example: *'Through [accelerator X] when they accept your application, they do a mentor event, mentor connecting event' (F3).* Accessing these events was also through other firms within the industry, for example: F13 mentioned: *'[firm X] invited us to participate in an exhibition in Dubai, they introduced us and supported us in this exhibition, we did not pay anything ... at this exhibition I met [firm Y]'.*

Thus, identifying the level of the actors whom the participants were able to reach indirectly within their network, allowed the researcher to depict the extent of the female entrepreneurs' network reachability. In addition, the domination of direct contact in building network ties, suggests that the ability to reach through to other actors is limited. Further, the description of the participants' network ties permits a picture to emerge of the reachability capacity within the participants' networks. Some comments suggest limited reachability and the existence of non-bridged ties within the participants' networks, for example: *'I don't have any network in this field'; 'I can't reach them'; reach [firm X] is so difficult'; 'there is no common pool'.*

On the other hand, it was possible to learn from the data about the participants' use of a few or different introduction sources to access other ties. For example: F1

commented on one of her relationships as a main source of introductions: *'I used to call them if I need any introduction'*. Thus, the network introduction (direct or indirect) represents an important indicator for understanding the network's reachability. In addition, the use of few or different sources of introductions as well as the existence of non-bridged ties helps to understand reachability within the participants' network ties.

### **6.2.3 The strength of network ties**

The strength of ties refers to a 'combination of the amount of time, the emotional intensity, the intimacy and the reciprocal services', which is involved in the entrepreneur's ties (Granovetter, 1973, p. 1361). In addition to Granovetter's argument that the frequency of contact is a main attribute for analysing the strength of network ties, researchers have considered the strength of ties from several standpoints, identifying the attributes that influence the strength of the ties. These attributes comprise: the degree of closeness (Kontinen and Ojala, 2011; Jack et al., 2004), trust (Kontinen and Ojala, 2011; Jack, 2005), knowledge, familiarity (Jack 2005) and the actor's resource commitment (Capaldo, 2007; Rowley et al., 2000). The strength of ties discussed here reflects some of these attributes, where aspects of ties with varying levels of strength, regardless of the type, were clearly demonstrated in the data.

The data revealed over 20 different attributes identified by the participants in their descriptions of their network ties. During the analysis process, coding of the interviews' texts was undertaken to identify the categories that reflected the degree of strength in the ties of these female entrepreneurs. A continuous process of recoding and revising these categories was undertaken to achieve an accurate reflection of the network ties described. As the process of data coding and recoding evolved, the characteristic degrees of strength in the participants' ties were finally clustered under 14 attributes. These attributes, then, began to cluster under four main thematic strengths, namely knowledge, quality of business interaction, closeness and trust, Table 6.1 presents these attributes.

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The next section, therefore, identifies and discusses these attributes as they appeared within the participants’ descriptions. In interpreting the attributes of the strength of ties, there are a number of subtle differences in the female entrepreneurs’ descriptions. Therefore, this section will include examples of these subtle differences relating to the theme of knowledge, quality of business interaction, closeness and trust.

**Table 6.1: Strength of ties attribute of the participants' network**

Strength of ties attribute	Knowledge	Quality of business interaction	Closeness	Trust
Ties attributes of the female entrepreneur's network	Personal knowledge	Business impact	Supportive	Knowledge trust
	Business knowledge	Convenience	Respect	Business trust
	Lack of knowledge	Follow-up	Lack of closeness	Low trust
		Quality of relationship		
		Strength of business impact		

### 6.2.3.1 Knowledge

A clear theme that emerged across the female network ties that indicated the strength of the ties, is that of knowledge- knowledge gained from the link between the female entrepreneur and her network ties. Knowledge appeared when the network ties and the female entrepreneurs knew each other at a personal and business level.

The element of **personal knowledge** refers to the degree to which the female entrepreneur and her network ties have a personal interaction. Knowing some of their ties personally contributed to building good knowledge about each other and demonstrated that the female entrepreneur and her network ties have a sense of each other. Personal knowledge appeared when the female entrepreneur had personal interactions with her network ties. For example, F1 indicated how her relationship with a CEO helped her to get access to his personal network: *‘He introduced me to his personal networks’*.

Such personal interactions are also described by another female entrepreneur when she was commenting on her relationship with CEOs: *'I still have people I speak with regularly, not just about business for personal and then business comes up... they are mostly CEOs'* (F6b). Knowing about each other's business can result in the network ties understanding each other's personal situation. For example:

*'He always keeps telling me about his work, his achievements ... he witnessed my development or my journey because I used to tell him before I started ask me how I can start my business, how did you do it?'* (F2).

Knowing the network tie well, also suggests having personal knowledge of them; for example, F7 described such a tie with a professional whom she dealt with: *'An [company X] researcher whom I know very well'*. In comparing a female entrepreneur's network ties, F8 described her knowledge of her business partner as: *'[business partner] and me, we know each other very well, the others in certain aspects not everything'*. Personal knowledge may also occur when personal interaction between the female entrepreneur and her network tie develops over time, for example: *'Every month I go to [event X] and I got to know all the people who are arranging this event'* (F2).

Personal knowledge may occur as a result of having something in common, such as a similar experience or demographic variable; for example: *'He is older than me by one year'* (F10). This similarity to the demographic variable creates informal bonds with the person with whom the female entrepreneur has similarities, for example: *'He is my age, so... [we have] informal dealings'* (F2). Similarities were also described when the participant had a similar experience to her network tie, for example: *'We are facing the same problems and challenges ... in the end I'm doing the same as him?'* (F2).

Common values, similar experiences and characteristics all contributed to defining the level of personal knowledge and, therefore, knowing each other better. Sharing experiences, problems and ideas may also suggest the development of some personal knowledge between the female entrepreneur and her network ties. For example: *'We share the problems that we face'* (F10); *'we talk, when they start to talk about their*

*problems, I used to tell them, like, Oh, I thought your business is good' (F12); 'I was talking a lot with a group of start-ups, about problems ... like, I have this case, what happened with you' (F14).*

Thus, personal knowledge in terms of having personal interaction, common values and experience, is demonstrated across female entrepreneurial network ties. In this context, participants made comments such as: *'I know them- they are a friend' (F4); 'I heard about them through people, through people I know' (F10); 'I used to know a colleague' (F14).* These expressions may suggest having limited personal knowledge. These ties were difficult to interpret as a deep level of knowledge, but they were described in a positive way. In addition, the participants' descriptions of some of their ties showed that some level of personal knowledge existed in terms of sharing ideas, but they did not go beyond particular limits, for example: *'It was sharing experiences more than anything, just talking and sharing experiences' (F3); 'I have few cousins that are entrepreneurs, we generally were talking about just how hard it is' (F8).*

**Business knowledge** refers to the level of awareness and familiarity with regard to the female entrepreneur's business that is shared between the female entrepreneur and her network ties. For example, F2 stated: *'[freelancer X and freelancer Y] accept, they accept to work with me, staying up at night to finish my work ... and they accept everything because they know what I'm going through'.*

Knowledge at the business level includes awareness of the firm's needs and represents the basis for dealing with the firm's challenges, as recounted in F4's description of her consultant: *'I sometimes go and consultant with him whenever we're facing a challenge that needs another opinion, because he knows a lot about the business'.* F6a, also, claimed that building deep business knowledge with a group of people is more beneficial to her business:

*'I've built a network of people that I can go back to, over and over again... if I work with group for one or two years, they will start to know our business trends and the like- yeah, this company works on this and this'.*



This knowledge provides advantages in recruiting new business interactions as F7 described in her ties with previous business connections: *'The person responsible at [company X] moved to another company... and because he knows that I work very well he gave me the partnership of the [company Y]'*. This element of knowledge reflecting the involvement of some of the female entrepreneurs' ties, can be seen in the descriptions of their business partners. For example: *'[Her firm's investor] is definitely more involved in the business' (F3)*. In comparing the business involvement of the business partners, F4 commented:

*'He doesn't help in day to day but he is informed, actually he is the most informed out of all the partners along with my sister who was very much involved in the development'*.

Thus, the above discussion reflects that knowing about a tie in terms of business and personal connections, contributed to increasing the level of strength of the ties that the focal female entrepreneur has with her network ties.

**Lack of knowledge:** In contrast to the good personal and business links as described in the above networks, the network ties of some of the female entrepreneurs did not appear to demonstrate these dimensions. Lack of knowledge within some ties constituted a clear aspect across the participants' descriptions of their network ties. This lack of knowledge reflects that the female entrepreneur has a superficial connection with her network ties and no personal dealings, connections and sense of being known. F7 gave an example: *'I need to go to event and I don't know their IT manager, usually their IT managers if they don't know you in person, they will ask for meeting'*. This lack of knowledge appeared, in terms of the business and personal side, for example, in comments on ties: *'He doesn't know a lot about my business' (F9)*; or her tie with a firm: *'It was a business, we don't know them' (F6a)*; or her tie with an organisation: *'No, they didn't know that much about me' (F14)*.

Lack of personal knowledge appeared in some female entrepreneurs' descriptions, for example:

*'I just want him to know who I am, because I know that he has heard about my project, I want him make a connection between the face and the name of my business just to know me personally' (F9).*

On the other hand, lack of personal knowledge is more evident in the ties built through social media. For example:

*'In Twitter specifically you build a network with people that you don't know person to person ... I have people talked to me on Twitter and asked me, because they know me on Twitter, can you give me your phone number we want to discuss a project with you, but they know me on Twitter and they don't have my phone number or email' (F8).*

Lack of personal knowledge featured particularly with those people encountered at seminars, conferences and entrepreneurship and networking events. Female entrepreneurs indicated that their ties with those people that they meet in entrepreneurship events were mostly superficial and not based on good and previous knowledge. For example:

*'Those I got to know when I was travelling to attend conferences ... but, you know what, I consider all these superficial relationships, those are the superficial relationships that I told you about' (F12).*

Some female entrepreneurs reflected on these superficial ties suggesting that people start to hear and have an idea about their businesses through these events. For example: F10 reflected this:

*'Because I go to these events people started to hear more about the product in this professional network. So, when I went to these kinds of events, the first time, the second time, they were like, yes, I heard about your firm'.*

Another female entrepreneur stated:

*'At this conference we got to know many people from the Gulf and the important thing is that they got to know about our firm and its name. That was enough for me, even if we get no deals, the fact that they get to know us is excellent' (F11).*

Indeed, meeting a lot of people in events was also an indication of the extent of lack of knowledge of network ties and the lack of being well known. For example:

*'Every time I go to seminars or conferences, I get to know many people ...all these networking events, you develop contacts, you develop relationships..., you obtain this business card, write to them on a genuine basis' (F9).*

F10, also, commented: *'I started to attend many tech events and I introduce myself directly to them and I take their business cards'*. In addition, lack of knowledge may surface when female entrepreneurs get to know people for the first time during events. For example: *'All events, activities, networking events, training and all people there, you can go around and you mix and mingle, you get to know them' (F9).*

Some female entrepreneurs described lack of knowledge as some ties were not distinctively or personally known. For example, F6b stated: *'A collection of people, people that I spoke with along the way'*. F2 described such a sense with her tie with a CEO: *'I told him ... I was in the boot camp and I talked to you, he forgot me because he sees a lot of people'*. F3, also, stated: *'I recently met one, a journalist in the Harvard Business Review, um, I forgot his name'*. F5, also, mentioned: *'I think he is a manager of something, he is related with [company X] somehow, I don't know'*.

Lack of knowledge was evident where the female entrepreneurs' described having no personal direct connection or dealing with some of their network ties. For example, F2 described her tie with a client: *'I wasn't dealing with them ... it was like me then [firm X], then [her client Y]'*. On the other hand, lack of knowledge was also demonstrated in statements where there was not mutual knowledge between the female entrepreneurs and some ties, such as: *'They invited me' (F5), 'They recommended me to them' (F7); 'they took our contacts through [accelerator X] ... they sent us emails and they gave us two training programmes' (F10).*

Comments on recently formed ties also suggest the lack of knowledge the female entrepreneurs have of these ties. For example: *'I have not dealt with her yet' (F12), 'I*

*registered with a new programme called [networking platform X], it's still new' (F14); 'they started recently, they are still new' (F11).*

However, the participants' descriptions of some their new ties were more promising in terms of building good relationship in the future. For example, F10 stated: *'We want to work with them but not now'*. F8, also, described her new connection with a client as: *'He is a new client who basically introduces me to people'*. F6b gave another example: *'I just recently met someone very interesting who has multilingual apps ... I found so much synergy with this guy ... he is very interested in sharing our content'*.

Limited experience of dealing with the network tie was also another indicator of lack of knowledge between the female entrepreneur and her ties, such as: *'This small experience with [organisation X] (F5); 'he was a speaker and after he finished I talked to him..., just I wanted to understand how I can make collaboration with other companies' (F2).* F11 summarised lack of knowledge by: *'At the beginning I wanted to know people ...and that was important because they were a new community of people that I did not know'*.

For the analysis of the research data, therefore, knowledge of the participant with her network ties represents a clear theme among the attributes of female entrepreneurs' strength of ties. Knowledge about network ties as an indicator of the strength of the entrepreneurial network ties, features in previous research (Jack, 2005), providing validity to these attributes of strength within the female entrepreneurs' ties. Based on knowledge at the business and personal level, female entrepreneurs in this study developed good relationships with their network ties, thereby supporting the strength of the network ties. In contrast, a lack of knowledge of the female entrepreneur's activities amongst some of her network ties affected the strength of these ties. Building good knowledge between the female entrepreneur and her network ties provides a strategic tool for increasing tie strength and the extent of mutual knowledge is valuable for identifying the strength of ties of those female entrepreneurs.

### 6.2.3.2 Quality of business interaction

The quality of business interactions emerged as a common theme for identifying the participants' strength of ties. This attribute reflects the impact of the interaction and importance of the female entrepreneur's network ties and the advantages accrued in terms of responsiveness and applicability to business situations. Based upon the participants' descriptions of their interaction with their network ties, the quality of business interaction was judged to be comprised of four main characteristics: business impact, convenience, education and follow-up. The following sections will define and describe these characteristics as they emerged from the participants' descriptions.

**Business impact** reflects the important role that some network ties play in these female entrepreneurs' businesses. This role as it appeared in the data, reflects the level of her ties and their impact on the way of thinking, business development and business decisions. Participants described the importance of some ties on their way of thinking. For example: *'They make you to think bigger ... through their mentorship and guidance I changed the idea of the business' (F10); 'he expanded my mind and helped me to look at the bigger image of the business than I thought' (F2); 'it's kind of shifted, there was a very dramatic shift in the way that we think ... we started to think in a way we didn't think before' (F6b).*

Business impact was also displayed in their business decision involving decisions related to starting up the business. For example: *'This event opened my eyes that I can start my own business ... it was magic for me and I started my business directly after this event' (F2)*, as well as, decision related to the business model, for example: *'They gave me comments, we played around the business model a little bit to adjust it' (F3).*

Business impact was also demonstrated through the degree to which the network ties of the female entrepreneur play an important role in developing the business. For example: *'He is the one who helped me to develop the project and the idea' (F1); 'they changed my understanding of the business, because I was a technical person, so, they are very important in developing the business side' (F14); 'there were specifically two*

*or three people that really were, I think, very important for us, to really develop it properly before we went for funding' (F6b); 'one of our employees is very important ... I treat him like a business partner' (F8); 'he helped to put things into perspective' (F3).*

Some participants indicated the importance of some business organisations' environment in their business start-up. For example:

*'People who were around me in the incubator at the beginning and especially the first two years of the business, that is very important and if I started the business out of the incubator, I might have closed. It is very important the environment around you' (F4).*

Others noted the importance of particular ties: *'He is the manager of our main customer' (F5); 'those were the main players' (F1); 'they are my bread and butter' (F7); '[manager X] is a very important person to us' (F6a); 'I would say those were more influential' (F8).* These comments suggest the level at which these ties were very important and useful to the participant's business. Further reflected is the importance of some ties when seeking their help, for example: *'I seek their help in business development' (F10); 'I needed his help' (F9).*

**Convenience and applicability** describes the level at which the participants' network ties react to business needs and concerns. Convenience is found in those ties which:

- Make the interactions easy to access, for example: *'If I need anything, I get back to them' (F1); 'whatever is in technology, I can go and ask him' (F2).*
- Give advice and help when the female entrepreneur needs it, for example: *'They give ... advice when I need' (F3); 'he gives help when I need help' (F5).*
- Responds and addresses the female entrepreneur's concerns, for example: *'If I have problem, it easy to get access to the CEO and all the other staff ... he is always very attentive and very interested' (F9); 'but when there were problems at work ... we were talking to a couple of mentors ... like [mentor X], I felt like he was very instrumental for us' (F6b).*

Convenience is also reflected in the degree of suitability of the network ties to the needs of the female entrepreneur, for example: *'What I need now is a network and that's what they have' (F14)*. Similarly, F13 commented:

*'He has huge experience, he worked in marketing and business development, this was one of the main important reasons to select him as my business partner' (F13)*.

Convenience of interactions was evidenced by the responsiveness of the network ties to the female entrepreneur's needs and concerns, for example: *'He is always ready to listen and welcome' (F2)*; *'that helped me, because at any moment, maybe in the middle of the night, like hello is this sentence supposed to be like this or that, how do I do it? She would help me' (F11)*; *'if I need help I can call him just' (F1)*; *'whenever I need help, they are there to help' (F5)*; *'if I want to ask them of something I can pick up the phone and ask' (F7)*.

Some of the female entrepreneurs' network ties displayed clear efforts to respond to the female entrepreneurs' needs, for example: *'They give you advice on whatever you want, you just need to ask' (F10)*. This effort of responsiveness resulted in providing help and advice, for example: *'She said I can help you' (F5)*; *'it a place where you can find what you want' (F6a)*; *'if I need any advice about the investment issues, it's basically [manager X] who I go to' (F9)*. Therefore, the focus with regard to convenience is on the network ties' willingness to provide help and react to the female entrepreneurs' needs.

Another element in the quality of the business interactions concerns the **follow-up** that some network ties provide to the female entrepreneurs. This element reflects the willingness of some network ties to do more, to help and educate female entrepreneurs to achieve their goals. Participants had mentioned their interaction experiences with some of their ties who followed them up, for example: *'They actually followed-up and they asked if I needed help' (F3)*; *'they are always posting about me and following-up me' (F5)*; *'... those they were following up and if I asked them and they didn't know, they will put me in touch with others they know or have experience' (F11)*; *'The person*

*we were contacting, had left this organisation for another place... as an individual we are still contacting him' (F13).*

Follow-up also involved teaching and educating the female entrepreneurs in a way that helped them to operate their business. For example: F10 stated

*'They tell you things that you didn't think of and they point out things that they don't want you to face and they know that these things are there and they don't want you to face' (F10);*

Similarly other female entrepreneurs commented: *'I got to learn from his own mistakes' (F8); 'he has trained me ... how to transform these answers into a very professional business plan' (F5).* This suggests that follow-up involves a process of educating and monitoring the business cases, for example: *'He told me how to do it and how to deal with it and if I did something wrong with a client next time how I should deal ...' (F2); 'they helped a lot in understanding how difficult a start-up would be' (F3).*

The participants distinguished between their network ties on the basis of the **quality of relationship**, which refers to the role and importance of interaction between the female entrepreneur and her ties that is strengthened through time. For example: *'Nowadays more, yes, because those are the people who have become my social circle and my friends after I started' (F3); 'their involvement is now, rather more than at the start-up time ... they were just employees and now they have businesses' (F8); 'the relationship with some of them is now greater, because they started a business, so they started to face the same challenges' (F14).*

Some ties that played an important role at a specific period of time, did not currently demonstrate the same level of importance and frequency of contact, depending on the ability of these ties to help at specific times in the business. These ties, however, were still highly respected, and regarded as reliable by the participants. For example: F4 commented:



*'I would say there were three people who were important at that time ... now [manager] is a friend, no more consultancy ... but [consultant X] I sometime go and consult him'.*

F3 described her tie with a mentor as:

*'He was great in starting up, he gave me a lot of time at the beginning ... he had something to offer and something to help at that stage, at starting up, but now as I moved forward, I would want other things from other people and he would coach other start-ups as well and he still very active as a mentor to a lot of other people'.*

The participants also described some of their ties as latent but that could be re-activated when it was necessary (Jack, 2005). For example: *'When we started we were contacted weekly maybe, now no,-just as we need them we get back to them' (F11); 'I was not contacting him that much ... but recently once a month, I want him to open his network in Saudi for me' (F8).* Thus, those latent ties demonstrated an important potential contribution to the female entrepreneur's business.

Another element reflecting the high quality of relationship between female entrepreneurs and their network ties is that of multiplexity. This concept as Larson and Starr (1993) describe, reflects how the interaction between the female entrepreneurs and their network ties happens over time, to fulfil different functions or assume multiple roles. For example: F2 stated: *'a friend of mine or a client, he became a friend later ... and then he started to recommend me to other people'.* Other entrepreneurs also explained:

*'I got to know this centre through the centre manager himself, he gave me a training course when I was at university ... and then he started this centre, so ... he help me through his centre to build the first and second prototype' (F1);*

And

*'They helped me, I mean, these two mentors helped me ... now I'm doing agreements with their companies, so, they helped me to advance business relationships with their companies' (F9).*

**Strength of business impact:** some of the participants' network ties demonstrated a low level of business impact, for example: *'From my previous work, not anyone helped'* (F5). Having connections with some ties does not necessarily reflect benefit to the participant's business. For example some entrepreneurs claimed: *'I have many friends but nobody helped me in my business, we sometimes have a chat, just a chat'* (F6a); *'I have people I still in touch with ... they're just friends'* (F10); *'when I talk to them about business, I don't get benefits'* (F14). Similarly F9 explained:

*'I have a different level of conversation with them or different topics to discuss because they're not in the online business and they're not in the IT related industry ... so, no help in this business, no'* (F9).

Most participants indicated the limited role that some of their network ties played in their business, for example: *'They didn't actually add value to the business itself'* (F10); *'they can't help me businesswise'* (F5). This lack of quality of business interaction in terms of low business impact and usefulness, represents a common aspect amongst some of the network ties and affects that the degree of strength of ties.

The strength of business impact appeared to be low also, in terms of receiving limited resources; for example: *'When I started they were excited and they encouraged us to start, but they didn't get me clients or connections or even advice'* (F2); *'they feel happy if I succeed, of course, but, let's say financial support, no'* (F1); *'efforts zero ... he works in his own company and he doesn't want any more headache'* (F4); *'Their input was not very strong, honestly'* (F11). However, some of those ties that had a limited role provided limited resources and thus had less effect on the business, were described in a positive way, as they provided emotional support and business encouragement.

Ultimately, quality of business interaction clearly emerges as a demonstration of the strength of ties within the networks of those female entrepreneurs studied. In Hite's study (2005), the concept of dyadic economic interaction is introduced as a main component within social relationships; this also enables other components, including personal relationships and social capital and the building of embedded, strong ties. She

argues that the dyadic economic interaction with new ties ‘often increased over time, facilitating additional interaction and resulting in increased interaction ease, extra effort and interaction quality’ (Hite, 2005, p. 125). In addition, Jack (2005) found that the ties’ usefulness and applicability as an attribute reflected the strength of ties. In the current research, the quality of business interactions is demonstrated by the level of the business impact, applicability and convenience, follow-up and increase in the quality of interaction over time (Table 6.2 summarises these attributes).

Although some of the characteristics of the quality of business interaction fit with these previous studies, the overarching theme to emerge regarding the quality of business interaction adds new dimensions and broadens the definition in question. Thus, this research further extends the literature by adding the quality of the business interaction as an attribute indicating the strength of the ties

**Table 6.2: Quality of business interaction attribute related to previous research**

<b>Author</b>	<b>Strength of ties attributes</b>	<b>Definition</b>
<b>Jack (2005, p. 1251)</b>	Usefulness and applicability	The level of the tie usefulness and applicability to an entrepreneurial situation.
<b>Hite (2005, p. 118)</b>	Dyadic interaction	The level of interaction ease, quality and effort between dyads ties.
<b>The current research</b>	Quality of business interaction	The level of business impact, applicability and convenience, quality of interaction and follow-up of the female entrepreneur’s network ties.

### 6.2.3.3 Closeness

Closeness or the level of respect and support as a part of the interaction between the female entrepreneur and her network ties also emerged as a clear and important attribute of strength of network ties across the participants’ network ties. Closeness is identified as a critical element in defining the strength of ties within the entrepreneur’s network in Kontinen and Ojala (2011) and Jack et al. (2004). The participants’

description of the feeling of closeness with their network ties in this study, were characterised by two main dimensions: respect and supportiveness.

Being **supportive** reflects a willingness to increase efforts to help the female entrepreneur reach her goals. Supportiveness was displayed in terms of receiving great help and support, as indicated by most of the female entrepreneurs. For example, F1 commented: *'They support me a lot, especially the manager, they were really a great team at that time ... they were great supporters'*. This aspect of strong links appeared also when F5 stated: *'[firm X] team, they have supported me more than you know ... they have supported me a lot actually'*.

Supportiveness was also presented in terms of obtaining advice, for example: *'[accelerator X] helped me a lot ... they helped me a lot to, like, oh yeah, I can do it outside Jordan' (F10)*; *'he encouraged me to apply for it' (F1)*, as well as, in receiving help in different business areas, for example: *'He helped me a lot in different issues' (F2)*; *'she helped us a lot ... in many things actually' (F6a)*.

The type of support that some participants received from their network ties was in terms of giving the time that they need to discuss the business as well as in receiving encouragement and emotional support, for example: *'He gave me a lot of time ... he did offer emotional support in terms of you can do it, you can make it, this is a good idea and the things that an entrepreneur wants to hear' (F3)*; *'their support actually encouraged me and, yes I, can go on' (F5)*; *'they give me a lot of emotional support' (F7)*. Some participants considered the environment of the business organisations as a supportive factor for their business: F4 claimed:

*'In my case I consider the environment was very supportive, whether the environment of having all these entrepreneurs around you, with different ideas, all of them starting and that encourages you'*.

Some other entrepreneurs were considered by many participants as very supportive people to their businesses, F9 stated:

*'The support and the help that I receive from others is so much, is great, even peer to peer, entrepreneur to entrepreneur, because we have different expertise and experiences. The supportive system, the ecosystem that they've built is very supportive to the start-up'.*

**Respect** is the other important aspect of closeness that was identified within the female entrepreneurs' descriptions of their network ties. The expression of respect appeared in some cases to suggest the feeling of esteem and appreciation between participants and their network ties. For example, *'I dealt with her as if she were my teacher and respected her, and she was beneficial for me' (F11)*. F3 genuinely expressed that her mentors were:

*'Tremendous ... the time and advice that those people give you was amazing' and she added to describe one of her mentors that 'the effort he put is really highly appreciated'.*

At the core of this dimension, therefore, was recognition of effort appreciation and personal respect. Respect may also be expressed through complimentary descriptions, for example: *'I loved her, she is very loyal to her work and she is well educated in her field' (F12); 'he is a genius' (F2); 'there is a very nice person called [X]' (F3); 'she is really unique and she is one of the people I love to ask and rely on her' (F11)*.

Therefore, respect as an expression reflecting the level of closeness in the entrepreneurial network ties, is captured by terms such as 'esteem' and 'liking'. In addition, respect was displayed through some expressions of caring, for example: *'They want the best for the business' (F10) and 'they asked if I needed help' (F3); 'They consider us from their close circle' (F13); 'always, always, always, all the time they consider us for future projects' (F10); 'he adopted the company, he took it as a personal responsibility' (F3); 'he believed in the business ... he used to talk about it' (F4)*.

Another level of caring appeared when some participants described their family, for example: *'My sister somehow, my father somehow, I mean, you know, they always ask about the company and we discuss it generally, but it is general discussion (F9); 'they*

*are really interested, but, I never asked them for advice, just, I'm talking with them about the funny stories that I face' (F1).* Thus, caring reflects the degree to which the female entrepreneur experiences feelings of concern from her network ties.

**Lack of closeness:** in contrast with close ties, there were some looser ties discernible in the participants' descriptions, whose attributes included high formality in their dealings and a focus on instrumental outcomes. Formal deals tended to appear where there were no personal relationships linking the participants with their ties. For example: *'As a personal, no, I don't have personal connections with them, it's a very formal relationship' (F5); 'they are not friends and it's like formal chat talking about ideas and business' (F2).* Such formality reflects the domination of business interactions in the relationships, for example: *'We have mostly business relationships' (F3); 'I know him formally; we dealt with him as a company ... formal just' (F6a).*

Formality was evidenced in terms of following specific procedures for doing things, for example: *'we sent them a monthly board report and we have a board meeting four times a year, sometimes they attend sometimes they don't' (F6a).* Also F3 stated:

*'They're VC, they're not an angel investment ... they just put in money, they meet ... they want to see the numbers, how the money has been spent, the ROI, the financial forecast and business plans' (F3);*

Along the same lines, formality occurred in dealing with some ties, for example: *'Whenever I need them ... like ok, get your money and do the job' (F5); 'we have our auditor, our accountant, our lawyer, we appointed people to do that' (F4).* Instrumental ties constitute another dimension that reflects a lack of closeness with some of the network ties in this study. In these instrumental ties, relationships were attached to work. F13 gave an example:

*'We started doing a project with them and I told them that I'm was start-up and needed some further time to get on my feet ... when our firm's performance improved and we were in a position to do the project, I contacted them, but they did not pay any attention because they had found alternatives' (F13).*

These ties were mostly discontinued once the specific conditions and functions no longer applied. For example: *'I applied to participate in the boot camp, but I would not want to continue with them ... so, I attended their boot camp and I stopped'* (F2); *'I had also been mentored under the programme called Mowgli, my mentor ... he was very helpful at that time, but it was a one year thing just'* (F4); *'I don't attend [network platform X] events much, I feel they don't do too much to help progress, so, I'm disconnected from their effort, I used to attend before not now'* (F8); *'my relationships with them cut after I left the work'* (F1).

Some participants indicated that they built ties with different individuals and organisations, but as these ties finished as they did not go for further business. For example: *'I contacted him to do a project, but he apologised ... so, nothing happened'* (F13). These ties were not finished in any absolute sense as F11 claimed:

*'We met and we discussed, but nothing happened ... but the idea is when we see him in any place or event we have a chat, you have that feeling, like, I know him'*.

Thus, lack of closeness is a common feature of some ties within the female entrepreneur's network, which impacts on the strength level of these ties. This lack of closeness reflects the degree to which the focal female entrepreneur has formal dealings with her network ties, and only work-related relationships.

In this context, some network ties which demonstrated high formality were, however, considered as important ties in terms of the financial or brokering contribution that they provided to their businesses. For example:

*'I consider [organisation X and organisation Y] as important players in my business ... but it took a long time to get their support and you have to apply to them, then give them a report every four months'* (F14);

F10 also commented on her tie with a network platform as:

*'[network platform Y] helped us a lot ... they give you like special treatment ... they connect you with everyone you need to know ... they were really good, but this is the same work of [accelerator X] provides, so, if I'm taking this*

*information and network for free, so, why should I go through [network platform Y] (F10).*

Other kinds of ties which demonstrated high formality when it comes to business dealings, however, were continued with a high level of personal knowledge, for example:

*'He is a friend of mine, he is a freelancer ... he is working with me, so, I have with him, um, he is my friend but when it comes to business it becomes formal, actually I have with all the freelancers that I work with like a formal contract and even with my friends, they signed with me a formal contract with terms and conditions' (F2).*

Thus, some ties were positioned at the midway point, demonstrating an insufficient level of closeness.

Upon the analysis of the research data, therefore, closeness represents a clear theme among the attributes of female entrepreneur's strength of ties. Having a close relationship with the network ties was also introduced in previous research as an important attribute defining the strength of ties of the entrepreneurs (Kontinen and Ojala, 2011; Jack et al., 2004). Based on respect and support, the female entrepreneurs in this research developed a close bond with their network ties, which supported the strength of their network ties. However, for some ties, formality and instrumental conditions in establishing genuine relationships, affected the closeness of the strength of ties that the female entrepreneur has with those ties. In this sense, level of closeness that the female entrepreneur has with her network ties, impacts on the strength of these ties. Therefore, an essential attribute of the strength of ties of the female entrepreneurs in technology firms in Jordan is the degree of closeness that exists between the female entrepreneur and her network ties.

#### **6.2.3.4 Trust**

The fourth pattern in the data is the presence of trust as an attribute of the strength of participants' network ties, and is judged to be critical by Kontinen and Ojala (2011)



and Jack (2005). The description by the female entrepreneurs of trust with their network ties can be divided into two aspects: knowledge trust and business trust.

**Knowledge trust** reflects the female entrepreneur's ability to rely upon her network ties' capability, experience and skills. For example: *'I depend on a group of people I trust and I feel that they are really smart and they can give me honest advice in this field' (F1)*. F2 described such trust with a business owner:

*'He is a person who you can trust, he is from our community, he is mature, he has passed this phase or the phase of struggle ... he is a person who we can talk to and trust'.*

This form of trust was demonstrated when the female entrepreneurs relied upon advice and help from their network ties; F9 described her tie with a CEO:

*'His advice is always of good value, because he's a very experienced and well-connected person ... basically, he is our ultimate source of mentoring, so, anything that I wanted to propose intellectually, technically, business development wise and anything else, I would go to him first'.*

F2 described such form of trust with her father experience: *'I always come back to someone who has huge experience and I trust his opinion very well which is my dad'.*

When describing her network ties with mentors, F11 gave an example:

*'They all have their own businesses, so, their advice was different, for example that mentor whom we met when we participated in [competition X], he is a lawyer and he has his own company and the nature of our work needs lots of legal things because of copyright and things like this... so, he helped us, we were considering his advice'.*

The description by some female entrepreneurs of obtaining advice from some organisations and firms within the ICT industry, reflects such forms of trust. For example, F9 reflected this type of trust:

*'You can freely discuss if it related, um, mostly or most of the entrepreneurs would use them to discuss their investments, it's when we are seeking to raise capital whether from angel investors or venture capital firms, they would offer great advice because that's one particular area that most of us are not very*

*good in ... the investment officer at [accelerator X] is very good ... she's very good, she's very experienced'.*

F11, also, stated:

*'I am a member in an organisation encouraging reading ... I used to take their opinion, particularly [manager X] I was considering her opinion, she was one of the people who loved our ideas'.*

Some female entrepreneurs expressed their trust in their work team's experience. For example, F8 described her tie with one of her employee as: *'He is like an employee but I treat him like a business partner'.*

**Business trust** was expressed as trust in the female entrepreneur's network ties at the level of discussing business-related information, for example: F10 described her trust in an organisation: *'It's business ... so, we trust each other at the business level'.* Here, F6a described this form of trust as a result of sharing business-related information with a group of ties, including mentors: *'When you go to someone with a problem you have to present them the whole problem, so you need to be very transparent'.* The type of business-related information that the female entrepreneurs discuss with their network ties is different; F11 summarised that as:

*'It depends..., with [manager W] I discuss issues related with management and business development ..., I discuss lots of things with her, when I have to make very hard decisions, very difficult to take it on my own, either at a human or profit level, her feedback was very useful. Also, [manager Z] and he is in the CEO of [accelerator X] ..., his feedback is always important and we take it into consideration'.*

In discussing issues related to business development and strategies, some female entrepreneurs trust some ties within their networks in addition to their business partners. For example, F6a indicated: *'I talk to [X] who is the [accelerator Y] board member ... just she is the most one I talk to'.* In F9's description of her tie with an organisation, she indicated:

*'I discuss issues about the growth of the company, where we are, what my goals are that we need to achieve and the performance toward my goals, what*

*obstacles we are facing in terms of either its recruitment or product development itself or marketing or online or whatever it is'.*

Thus, business trust is demonstrated through the willingness of the entrepreneurs and their ties to discuss business-related information, either financial, intellectual, technical or business-development focused.

**Low trust:** here female entrepreneurs suggest that they have not established or developed sufficient levels of trust with some network ties; therefore, this may not help to strengthen the network tie. F1 described one of her ties as:

*'I tried to contact an office here in Jordan, but I did not feel comfortable to work with them ... I did not feel, um, they were not honest and they asked for a lot of money ... I can't trust their network because I know my project and I know that I want this and this and this'.*

F7 described her tie with a professional as:

*'He did not do a good job..., we started by checking with the [consultant X], however, he felt at the end that the project is beyond his experience, but he did not tell us at the beginning'.*

The presence of caution in their dealings also suggests a low level of trust with some ties. For example, F14 described her business partnership:

*'I have a business partnership with two companies, one of them I was working with in the past, they welcomed me but with a very high degree of caution, like, you are still a start-up, do you know what I mean'.*

F13 mentioned how some ties who were potential business partners, were opportunist in the relationship which influenced negatively her level of trust:

*'What made me refrain from building relationships was that we give our ideas and people steal them, they stole from us three times. So, we started to be very careful in building our relationships, some of them contacted us as real business partners ... this happened to me three times at this level. I felt people made a fool of me, after this I became very, very careful'.*

Female entrepreneurs' descriptions of some disconnected ties were framed in terms that suggested no level of trust. For example, F1 commented: *'I have no connection with them, because they sent me bad quality products, so I cut my relationship with them'*. Also, F7 explained:

*'I had two years ago an encounter with another company that I did not expect that this was their way of dealing, I did not know. So, we signed a joint venture agreement, we approached a client and then I figured out that they were telling me one thing and the client something else, it was a really messy situation. So, I stopped the relation completely' (F7).*

Thus, the presence of trust had a clear influence on the strength of the network ties of the female entrepreneurs. However, when trust was absent, the depth and strength of the ties were negatively affected.

Based upon the literature, trust is one of the characteristics, which reflects the strength of the entrepreneur's ties (Kontinen and Ojala, 2011; Jack 2005; Jack et al., 2004). Based upon the data, trust was demonstrated as an important attribute that helps to strengthen the network ties of the female entrepreneurs. While a degree of trust is available in most of the participants' network ties, greater levels of trust appeared in specific ties.

Ultimately, the above discussion on the strength of ties demonstrated the group of attributes in the data that functioned as a basis for defining and describing the network strength of ties of the female entrepreneurs under study. Therefore, the strength of the network ties of the participants is based on the degree of knowledge (Söderqvist and Chetty 2013; Jack, 2005), closeness (Söderqvist and Chetty, 2013; Kontinen and Ojala, 2011), trust (Söderqvist and Chetty, 2013; Kontinen and Ojala, 2011; Jack, 2005) and quality of business interaction.

#### **6.2.4 Network density**

In analysing the entrepreneur's network, density describes the extensiveness of ties between the actors within his/her network (Dubini and Aldrich 1991). It reflects the degree to which the actors within the entrepreneur's network are connected to each

other (Hampton et al., 2011; Martinez and Aldrich, 2011). As such, a high density network comprises a group of actors that know each other and the low density network, on the other hand, includes actors from different backgrounds who do not have a tie with the other network members.

This research focuses on studying and analysing the network from the perspective of the female entrepreneur as the focal actor. Therefore, the analysis of the presence or absence of a relationship between her network ties was based on the focal actor's (ego's) description rather than the ties connected to the focal actor description (Wasserman and Faust, 1994). Based on the data, participants used some accounts that allowed the researcher to learn about the density aspect and the level of this density. Such expressions reflect that the members or group of members within the female entrepreneur's network know each other, for example: *'We are always meeting, we are always seeing each other' (F9)*; *'all of these people are friends' (F6a)*; *'we become a community' (F2)*.

In addition, analysis of the dyad ties described in each case facilitated learning about the linkage that existed between the ties of the female entrepreneur's network. Those two methods enabled evidence to emerge about the density levels within the network of the Jordanian female entrepreneurs in technology firms, which will be discussed in the next chapter.

### **6.2.5 Network centrality**

The final structural characteristic was network centrality as a critical element for analysing the network ties of the female entrepreneurs. This dimension of structure of the entrepreneur's network reflects the central position he/she has within the network; this can be described as 'betweenness' or the ability of the entrepreneur to be a broker between their network ties (Freeman, 1979). Thus, centrality within the participant's network is determined by the female entrepreneur's ability to serve as a communication channel linking other two parties together (Aldrich, 1989). Based on the participants' descriptions of their central role, within networks these female entrepreneurs used different expressions. For example: *'They used to ask me to connect*

*them with*'; *I connected between*'; *I usually hook them up with*'; *I put them in touch with*'; *I connected them with*'; *I have linked [firm X] with*'.

### 6.3 Summary

The analysis of the descriptions of the female entrepreneurs' network ties revealed the patterns of the structural characteristics of the network. Each of these structural characteristics has subordinate attributes, many of which have been considered in previous studies. Based on findings in this study, and in addition to knowledge, closeness and trust, this research adds also to the literature on the strength of ties new attribute, which is the quality of business interaction (Table 6.2). This will be considered further in Chapter 9 where contribution of the research are discussed. The attributes and working definitions of these structural characteristics of the network of the Jordanian female entrepreneurs in technology firms are listed in Table 6.3.

**Table 6.3: The definition and attributes of the structural dimensions of the network**

<i>Structural dimensions</i>	<i>Definition</i>
<b>Diversity</b>	The female entrepreneur's network ties variety in terms of tie's type and gender.
<b>Strength of ties</b>	The level of knowledge, closeness, quality of business interaction and trust between the female entrepreneur and her network ties.
<b>Knowledge</b>	The level at which the network ties of the female entrepreneur's participant know each other through having personal interact, something in common and awareness of her business.
<b>Business interaction quality</b>	The level of business impact, applicability and convenience, quality of interaction and follow-up of the female entrepreneur's network ties.
<b>Closeness</b>	The level of support and feeling of esteem, care and appreciation in the interaction between the female entrepreneur and her network ties.
<b>Trust</b>	The ability of the female entrepreneurs to rely upon her network tie's capability, experience and skills as well as their willingness to discuss business-related information.
<b>Density</b>	The degree to which the female entrepreneur's network of actors know each other.
<b>Reachability</b>	The network ties who act as a broker for the female entrepreneur.
<b>Centrality</b>	The female entrepreneur's ability to be a broker for two other actors within her network.

The next chapter (Chapter 7) will address the first research question related to the network structure of Jordanian female entrepreneurs in technology firms and how this

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structure develops through time. A theoretical model explaining how the structural characteristics of the participant developed, will be presented and discussed. Explaining this structure will offer the groundwork for addressing the second research question which is related to network content which will be addressed in Chapter 8.

## **Chapter 7: Development of the network structure**

### **7.1 Introduction**

This study focuses on the development process of the network ties established by the Jordanian female entrepreneurs in order to generate advantage for the early development stages of their technology firms. The aim, then, is to understand the development process of the network's structural characteristics aligned with the content that emerges from these structural characteristics. To achieve this objective, this chapter will focus on the development model represented by the structural dimensions of the entrepreneurial networks, followed in the next chapter by a focus on the content of these structures. Building upon previous chapters that identified and clarified the structural dimensions of the participants' networks, the next task is to identify how the structural characteristics of these networks develop over time.

This chapter addresses the first research question related to the development process of the network structure: 'How does the Jordanian female entrepreneur's network structure develop to facilitate the start-up and early-growth of their technology-based firm?' First, this chapter will discuss the development process of the participants' network structural dimensions focusing on the most common patterns that emerge through the cross-case analysis. Then the chapter will present and discuss the development model evidenced by the structural characteristics of the female entrepreneurs' networks. Within and cross-case analysis generated a group of themes that identified and described the network structural characteristics of the female entrepreneurs, which are highlighted in Figure 7.1.

### **7.2 The formation of network ties**

This section provides an analysis of the formation of the participants' network ties - who, how and when. This description enhances understanding of the evolution of the structural characteristics of the networks of the female entrepreneurs in the study, which is presented in the next sections.



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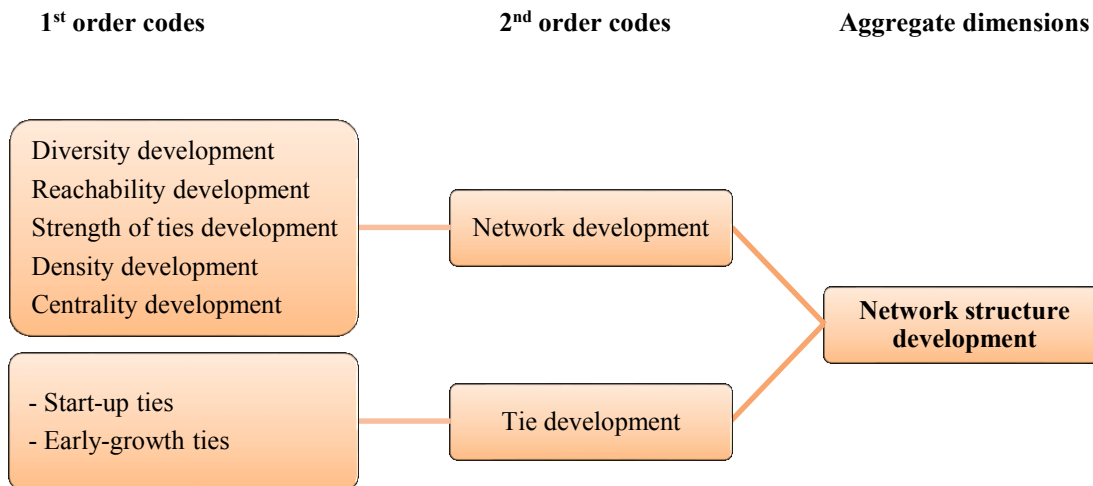


Figure 7.1: The research structure themes: network structure development

Source: Researcher

### 7.2.1 Network ties: who

In terms of *who*, the analysis of the participants' networks demonstrated that they relied on different types of ties through which they obtained and reached the required resources to start and grow their businesses. These network ties included:

- **Personal ties** that were based on personal bond relationships including family, friends and previous work colleagues.
- **Business ties** that were based on professional bonds relationships and knowledge through time and included actors in the same field: other entrepreneurs, CEOs and managers, mentors, business support organisations, professionals and business partners.
- **Market network ties** that were based on a relationship with a high degree of formality and included clients, distributors, agencies and firms in the industry.
- **Networking platforms and events** that comprised two main streams: the organisations that establish network platforms including regular events and competitions. The other stream included conferences, exhibitions and seminars. These networking platforms and events were a place to facilitate the building of network ties or 'a community' as some female participants described it.

Based upon the participants' descriptions of their network ties, the data in Table 7.1 show the gender and type of ties that the female entrepreneurs mentioned over course the interviews<sup>17</sup>.

**Table 7.1: The ties type and gender**

Firm (IND & INC)	Number of described ties	Type of ties				Gender of ties
		PT	BT	MT	NP&E	
F1 (INC)	15	2	7	6	1	4M;1F;10C
F2 (IND)	40	11	20	5	4	24M;7F;9C
F3 (INC)	43	4	30	7	2	23M;7F;13C
F4 (INC)	18	4	11	2	1	6M;3F;9C
F5 (IND)	20	4	7	3	6	6M;5F;9C
F6 (INC)	32	10	14	6	2	21M;2F;9C
F7 (IND)	14	4	7	3		7M;7C
F8 (IND)	14	4	6	2	2	10M;2F;2C
F9 (INC)	17	2	11	1	3	7M;4F;6C
F10 (INC)	21	3	15		3	12M;4F;5C
F11 (INC)	47	7	24	8	8	17M;11F;19C
F12 (INC)	19	3	12		4	7M;5F;5C
F13 (IND)	41	4	17	14	6	15M;9F;17C
F14 (INC)	25	3	14	4	4	7M;3F;15C

Key: PT= Personal Tie; BT= Business Tie; MT= Market Tie; NP&E= Networking Platform and Events and C=Companies; IND= Independent entrepreneur; INC= Incubatee entrepreneur.

### 7.2.2 Network ties: how

In terms of *how*, analysis of how the ties were introduced into the network and the data in Table 7.4 indicated the use of both the direct and indirect ties to build contacts in the all cases under study. The data suggest a predominance of direct ties within most participants' networks, when the female entrepreneurs first started out. The analysis showed that the direct ties were the means of initial introduction that these female entrepreneurs relied on to construct access to the required resources. Further analysis indicated that the direct business ties in particular were the main precursor of building

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<sup>17</sup> These descriptive quantitative data were derived from qualitative descriptions of 366 described ties. The qualitative description of these ties generated sufficient data in terms of the type of ties, the gender of the ties and how, when and why they used these ties. Analysis used this descriptive quantitative data to support, clarify and refine the qualitative text. Thus, these quantitative data are used throughout for the purpose of ensuring and clarifying the qualitative research findings.

indirect ties. As such, these direct business ties serve as a main source of reaching new actors indirectly.

**Table 7.2: The number of direct and indirect ties within the participants' networks**

Firm (IND & INC)	Number of Tie	Tie's entry: Direct/ Indirect	Development	
			ST	EG
<b>F1 (INC)</b>	15	9(6)	9(6)	-*
<b>F2 (IND)</b>	40	30(10)	30(10)	-
<b>F3 (INC)</b>	43	18(25)	17(10)	1(15)
<b>F4 (INC)</b>	18	12(6)	5(1)	7(5)
<b>F5 (IND)</b>	20	15(5)	15(5)	-
<b>F6 (INC)</b>	32	19(13)	16(9)	3(4)
<b>F7 (IND)</b>	14	7(7)	4(4)	3(3)
<b>F8 (IND)</b>	16	9(5)	8(4)	2(2)
<b>F9 (INC)</b>	17	3(14)	3(14)	-
<b>F10 (INC)</b>	21	6(15)	5(9)	1(6)
<b>F11 (INC)</b>	47	18(29)	11(12)	7(17)
<b>F12 (INC)</b>	19	10(9)	5(7)	5(2)
<b>F13 (IND)</b>	41	25(16)	14(4)	11(12)
<b>F14 (INC)</b>	25	9(16)	5(12)	4(4)

Keys: ST=Start-up stage; EG=Early-growth stage. \* F1, F2, F5 & F9 analysed as a start-up network as mentioned in Chapter 5.

### 7.2.3 Network ties: when

In terms of when, the focus of this research is on the early development stages, including the start-up and early-growth stages. Thus, an analysis of the participants' network ties was determined by the point at which they utilised the ties on which they relied. The data in Table 7.2 indicated that they relied on different types of ties through these early development stages. Personal and business ties appeared at the start-up stage, and then market ties and networking platform events at the early-growth stage<sup>18</sup>. Analysis of the interview transcripts and data in Table 7.3 indicated that the ties in the start-up and early-growth stages were predominantly male.

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<sup>18</sup> Although the data in Tables 7.2 and 7.3 indicate that there are a small number of ties described under the market and networking events group, the participants described these two type of ties as a group rather than as individual ties, such as clients, firms or distributors. For example, 'recently there are two, always two clients usually they suggest other potential clients' (F10).

**Table 7.3: The change in the types of ties**

Firm (IND & INC)	Number of described Tie	PT		BT		MT		NP&E	
		ST	EG*	ST	EG	ST	EG	ST	EG
F1 (INC)	15	2	-	7	-	6	-	1	-
F2 (IND)	40	11	-	20	-	5	-	4	-
F3 (INC)	43	4	-	22	8	0	7	1	1
F4 (INC)	18	2	2	4	7	0	2	0	1
F5 (IND)	20	4	-	7	-	3	-	6	-
F6 (INC)	32	9	1	11	3	3	3	2	0
F7 (IND)	14	2	2	6	1	0	3	0	0
F8 (IND)	16	4	0	6	0	0	2	2	2
F9 (INC)	17	2	-	11	-	1	-	3	-
F10 (INC)	21	2	1	10	5	0	0	2	1
F11 (INC)	47	5	2	15	9	0	8	3	5
F12 (INC)	19	3	0	8	4	0		1	3
F13 (IND)	41	4	0	11	6	1	13	2	4
F14 (INC)	25	3	0	12	2	0	4	2	2

Keys: ST=Start-up stage; EG=Early-growth stage. \* F1, F2, F5 & F9 analysed as a Start-up network as mentioned in Chapter 5.

**Table 7.4: The gender of the participants' network ties**

Firm (IND & INC)	Number of described Tie	Ties gender	
		ST	EG
F1 (INC)	15	4M;1F;10C	-
F2 (IND)	40	24M;7F;9C	-
F3 (INC)	43	18M;5F;4C	5M; 2F;9C
F4 (INC)	18	3M;2F;1C	3M;1F;8C
F5 (IND)	20	7M;4F;9C	-
F6 (INC)	32	17M;2F;6C	4M;3C
F7 (IND)	14	4M;4C	3M;3C
F8 (IND)	16	8M;2F;2C	2M;2C
F9 (INC)	17	8M;3F;6C	-
F10 (INC)	21	8M;3F;4O	4M;1F;1O
F11 (INC)	47	11M;4F;8C	6M;7F;11C
F12 (INC)	19	7M;3F;2C	3M;1F;3C
F13 (IND)	41	8M;5F;5C	7M;4F; 12C
F14 (INC)	25	6M;2F;9C	1M;1F;5C

Keys: ST=Start-up stage; EG=Early-growth stage; M=Male; F=Female; C=Companies. \* F1, F2, F5 & F9 analysed as a Start-up network as mentioned in Chapter 5.

## 7.3 Network structure development

### 7.3.1 The development of network diversity

To explore the development of diversity, within the female entrepreneurs' network, further analysis was developed of their network ties at the start-up and early-growth

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stage. The most common theme to emerge through cross-case analysis indicated the predominance of business ties used as a source of different resources in the start-up stage. With increasing their efforts to diversify their networks, as their business needs and challenges changed, the female entrepreneurs sought new groups of actors for their network. Nonetheless, these ties were male-dominated throughout the early business development stages.

### 7.3.1.1 Diversity in the start-up network

Based on the degree of variety in the ties, the network ties of the most cases included a mix of business ties with the presence of some personal ties at the start-up stage. There was evidence that their network ties at this stage were dominated by a small circle of business ties, established within male-dominated networks. Indeed, when the female entrepreneurs searched for the necessary resources to start their businesses, they identified business ties as a more suitable source for obtaining the resources they lacked. Comment from F1 explained this: *‘My network when I started, it was more like engineers and entrepreneurs were related to technology’*. This reflected also in F11’s comment on her start-up:

*‘When I started, I was dealing with people in engineering only ... we went to [organisation X] ... but they did not support our business idea ... then we went to [accelerator Y] and then they invested. Here we got to know lots of people, we participated in [Competition Z] and at that time we got to know mentors and many entrepreneurs’.*

The connected business ties when those female entrepreneurs first started included business organisations and accelerators, mentors, professionals, business partners and competitions. These business ties gradually started to grow to include other entrepreneurs, investors, managers and CEOs early in the start-up stage in some cases and later at the transition period into the early-growth stage in some other cases.

While business ties were utilised by the female entrepreneurs from the outset, their reliance on personal ties to obtain resources was relatively limited. An important similarity demonstrated among most of the female entrepreneurs was the limited extent

and presence of family, friends and previous work colleagues in the networks they built to start and grow their business. Comments from F8 on her family provide an explanation: *'Family, not really ... not much, they didn't support much, no, not financially, even emotionally; not really, they thought it a big risk'*. F6a commented on her relationship with friends as: *'Not for work, my relationship with them is very superficial ... I have many friends but nobody helped me in my business, we sometimes have a chat, just chat'*. In addition, F2 commented on her contact with the previous work colleagues as:

*'Our relationships were attached to work, so, when I started they were excited and they really encouraged us to start, but they didn't get me clients or connections or even give advice, but they really were encouraging us to start'*.

### **7.3.1.2 Diversity of the early-growth network**

As the female entrepreneurs' firms moved into the early-growth stage, their networks became more diverse as they increased their business ties and added new types of ties. Thus, the business ties continued to provide support but a new group of actors was added, including market ties, networking platforms and events groups. The market ties included clients, distributors, agencies, and other firms within the sectors. A comment from F8 explains the type of ties at her firm's early-growth stage:

*'It has grown, yes, with time it has grown ... a lot, a lot, I have all my clients added as new networks, I have a lot of people that I have met, it's an explosion ... so, clients, partners who work with ... people who introduced people to me or people who I met during events'*.

The extent of utilising the networking platforms and events group within the participants' networks also increased as the female entrepreneurs grew their business; events particularly included conferences, seminars and industry meetings. Participating in these events, competitions and being a member in networking platforms played an important role in increasing the business tie diversity of those female entrepreneurs. F9, from those who had just moved into the early-growth stage explained:

*'I'm still using the contacts that I know, but it has grown ... the contacts increased with time definitely, because you get to be involved in many other activities and events and networks and groups and discussions that are related to the field, so, you start meeting new people and making a new contacts and building on the previous ones, so, basically, when I first joined [accelerator X], most of the contact was with peer contacts, I mean, with other entrepreneurs and start-ups and the team of [accelerator X] themselves included the CEOs, the investment officer, the mentorship programmes and then gradually they started introducing me through the mentorship programmes to the mentors who are based in Jordan and from there I've started to expand the network of contacts in this specific sector'.*

The ties that the participants built through networking platforms and events included business and market ties. Notable out the analysis was that those independent female entrepreneurs who were not engaged in any business incubators or accelerators, had used entrepreneurship competitions and networking platforms, since starting up, to build contacts with business actors. The data presented in Table 7.2 indicated that those firms, namely F2, F5, F8 and F13, had used this group of ties since the start-up and increased its use as the firm moved to the early-growth stage.

Based on the degree of gender variety, the development of diversity within the participants' network demonstrated a low level of gender variety as it continued to be male-dominated in the early-growth stage: some participants commented: *'Most of those that we know are males' (F6a); 'I was talking to many entrepreneurs, ladies, but most of them were guys' (F2).*

This clearly appeared in the analysis of the empirical material and the described ties of each case, with similarity among all cases demonstrated in terms of the gender, where most of the ties that the female entrepreneurs have connection with were males (see the above Table 7.3). What could be seen within these cases was that the male-dominated network emerged in the very early stage and as the firms evolved into the early-growth stage. In fact, diversifying their network in terms of gender was difficult for the female entrepreneurs, where even finding another female entrepreneur could be an empowering experience. F6 explained: *'It has been pleasant that there are some*

*female entrepreneurs in [accelerator X], which has been beautiful ... we became friends and we support each other'.*

Some female entrepreneurs who participated in this study indicated that their network was made up of male-dominated ties, although they were looking for help from other businesswomen in their sector, but they could not find many. Some participants commented:

*'Most of them are males, all of them in our field are men ... I see the same female entrepreneurs whenever I go, but how many are we? Few ... you don't find female entrepreneurs, we are not a lot unfortunately, even in the organisations, there are no businesswomen as mentors? Go and check [accelerator X]'s website, who are there, all of them men' (F12)*

*'I tried to find a mentor, but a female mentor, of course, there is no one, I have been in the market for some years, there is no female mentor, I mean, there is no businesswomen as a mentor you can go and talk to ... I can't find any' (F14).*

### **7.3.2 The development of reachability in the network**

This section explores the extent of the network ties that acted as a broker within the participants' network. The cross-cases analysis revealed how reachability developed within the network. Those actors who acted as brokers within the female entrepreneurs' networks evolved through the early development stages of the firms. The predominance of the direct ties within the participants' networks at the start-up stage decreased their network reachability; however, their ability to reach indirectly through different ties increased in the early-growth stage, which enhanced their network reachability.

#### **7.3.2.1 Reachability within the start-up network**

The ability to reach out to others at the start-up stage originated from a few direct business contacts with actors, where these actors provided access to other contacts as time went on. There was evidence that the female entrepreneurs mostly relied on some direct ties, particularly through direct business contacts, at the start-up stage to reach out to new actors. As mentioned above (Section 2.2.3), the direct ties were the initial gateway to reaching out indirectly to other actors. Although the data in Table 7.4



indicated that the number of indirect ties in some cases is more than direct ties, these ties originated from one or a small number of routes.

For those incubatee entrepreneurs, entrepreneurship institutions, incubators, accelerators and their channels, networking events appeared to play an important role in building those female entrepreneurs' networks and, therefore, helped them to reach through to other actors when they first started. For example, F9 commented:

*'I'd never meet this guy before, when I started I was introduced to him by [accelerator X], so, I asked if you could mentor, I mean, be one of my mentors'.*

The business ties, particularly with organisations which ran regular networking events appeared to be an important gateway to accessing other business ties at the start-up stage for those incubatee participants; these included mainly other entrepreneurs, managers, CEOs and support organisations.

For those independents entrepreneurs, reaching out at the start-up stage, also occurred through a few business ties which included: business partners, firms within the industry and entrepreneurship competitions and events. A comment from F8 explained this:

*'When I started because I was working with the contact list of my business partner, he would introduce me to many clients or potential clients ... it was important at the beginning, I mean, if he didn't introduce me, I would not get projects'.*

During the development of the business idea and acquisition of start-up resources participating in some events, particularly the entrepreneurship competitions and industry events, appeared to be important in building new connections which could provide many benefits and additional connections as the time went by. Thus, the use of direct ways of connecting with actors, and moreover, the use of one or a few routes to reach them affected directly the extent of the female entrepreneurs' network reachability at this stage.

### 7.3.2.2 Reachability within the early-growth network

Further analysis of their reachability revealed the developmental nature for extending the brokers into the networks of the female entrepreneurs. As their firms grew, the ability of the participants to use different actors to reach out to third parties increased: they were able to reach out through these different actors to new players either clients, potential clients, investors, other firms or other regional and international firms. F11 gave an example: *'What happened was the people that I got to know at the beginning, they would introduce me to others, even to people at the regional level'*. Also, F3 explained:

*'For example, if I want, if I'm looking for a consultant regarding SEO. I would know that I should ask X person and he will put me in touch with someone from the States who has worked on a similar project. I think the most important thing in any business is a good network, because a good network can get you in touch with investors, with consultants, with potential business partners'*.

It was evident in the analysis of the growth of early network ties, that more market ties were established, together with networking platforms and events. These were reached either directly or indirectly, alongside the continued supportive business ties. Further examination, across the cases, indicated that most business ties originated in the early-growth stage were reached indirectly. However, most market and networking platforms and events were reached directly. Therefore, a dual network of direct and indirect ties emerged after the start-up stage. This suggests that these female entrepreneurs had kept using their direct contacts to reach actors; however, they were also able to reach out through different parties in the early-growth stage. As a result, this research suggests that the network of the female entrepreneurs at the early-growth stage was predominantly through a dual network of direct and indirect ties, thereby enhancing the degree of the participants' network reachability through different actors.

In increasing the reachability through different actors in the firm's early development process, participants drew attention to three key conditions, which included: networking events attendance at, the entrepreneur's characteristics as being proactive

in building relationships and maintaining these relationships. A comment by F3 explained about reachability:

*'It's not very difficult because if you are active, if you attend events, if you talk about your idea and you listen to other people, it's not difficult. You have to make sure you maintain that ... but if they see that you are listening to their advice and you are taking it and implementing it, they will be more willing to actually share more of their experiences with you and introduce you to other people'.*

F9 indicated the importance of being proactive in building relationships to secure access to new channels:

*'It really depends on the entrepreneur himself or herself and how proactive they are, how ready they are to embark in this sort of the journey, how open they are to meeting new people, making new contacts, capitalizing on the contacts that they have got ... the opportunities are there, the channels of communications between us and other networks in Jordan are available, but we have to be more proactive, we have to take initiative'.*

F13 explained that being introduced through other actors is more linked with attending events:

*'This is more related with events, when we go to events. For example, when we went to the Arab Content conference, [CEO] came and he introduced himself ... when he came to Jordan, we met and then he introduced us to investors especially from Lebanon'.*

The cross-case analysis, particularly in terms of the participants' network diversity and reachability, however, indicated that three cases, namely F4, F6 and F7, had a good level of diversity and reachability since the start-up stage. They commented: *'You can't work without people, in every step of the way there were people helping me with something, many' (F7); 'Well actually I have a good network; I myself had a good network when I started' (F4).*

The data suggest that the high diversity and reachability of those female entrepreneurs comes back to their ability to utilise and benefit from both personal and business network ties since the start-up stage. The data showed that there was a good level

different family members as well as business ties during the start-up within F6's network. However, there was evidence also that F4 and F7's network ties included a good mix of business and previous work acquaintances.

Clearly, the data demonstrated that the pre-entrepreneurial experiences of F4 and F7 played an important role in preparing them to build connections and having a strategic understanding of building network ties. F7 stated:

*'Basically because I have large number of years of experience, the start-up to me was not start-up, was not very hard, I know the market requirements, I know what it needs. So, the way I started is, because I have a lot of connections with the international companies in the industry, I managed to create the first project ... and we managed to sell it to [firm X]... I have lots of connections worldwide'.*

Along the same lines, F4 explained:

*'It's because I have connections, because I know people, people know people, who facilitated something like this. The world now is small. With having, I mean, I went outside Jordan in many training and courses and I got to know people like all over. So, they did help me actually'.*

In addition, F7 indicated that the previous work ties were important in building her network ties, she stated:

*'[Company's X] events for different business partners, when I started at the beginning I was a technical person. So, I used to attend a lot of technical discussions and technical details. When I came into management, the business partner events for [Company X], business partner events for [Company Y], because I was representing both companies in my previous job, plus, I attended other main suppliers and IT events in the industry ... this is how I developed my network ... I built on it, but the base was there'.*

What differentiates case F6, on the other hand, was that this firm started as a lifestyle business producing a product and then adding on the business model with a new stream of created digital content. This suggests that here were two start-up stages occurring during the business life cycle before it moved into the early-growth stage. The data showed that during the lifestyle period, the network of each of the two female

entrepreneurs who owned this firm, included a reasonable number of family members; however, during the stage of moving to the digital content stream the network reflected more business ties. This suggests that their networks were able to build a good mix of personal and business ties by the stage of moving to the early-growth stage. In fact, both of those female entrepreneurs had brought both business and personal relationships to the firm. One of them commented on the other's network:

*'[The female co-founder] has a huge number of connections, so, I would imagine it's both, personal network and it's a professional network ... I never find it difficult to get access to someone to be honest with you ... but I'm sure that other people do'; she stated also 'I moved between three countries ... I meet new people everywhere I go' (F6b).*

F4 was also running a business in the same sector before she shifted to the new business studied in this research. Thus, in this case, the female entrepreneur's start-up was at a different level in the entrepreneurial process and her start-up network was not built from scratch as she was able to transfer her human capital and resources to the new business; she also used previous work acquaintances to reach through to some resources which mainly included financial and marketing support.

### **7.3.3 Development of the strength of ties**

This section analyses and explores the participants' strength of network ties as they developed in relation to their involvement in the start-up and early-growth stage. Within the entrepreneurial network literature, two main perspectives are found to indicate and identify the strength of ties in the egocentric network. The first perspective considers the entrepreneur's network ties as being either strong or weak ties (Granovetter, 1937; Dubini and Alrich, 1991). The second perspective, however, considers the entrepreneur's network ties as a continuum ranging from strong to weak (Perry-Smith and Shalley, 2003; Jack et al., 2004; Söderqvist and Chetty, 2013).

The 'strong tie continuum' concept has built on the assumption that there is no a specific difference between network ties as strong and weak; rather these ties can be cited on a continuum (Söderqvist and Chetty, 2013; Perry-Smith and Shalley, 2003). This continuum allows researchers to obtain 'a much richer understanding of

entrepreneurial strong-tie relationships than is possible if their study is restricted to comparisons with weak-ties dichotomy' (Jack et al., 2004, p. 117). The continuum maps the strong ties at the high end and weak ties at the low end of the continuum and some other ties sit in between the two ends (Perry-Smith and Shalley, 2003; Jack et al., 2004).

The previous chapter's explanation indicated that not only knowledge (Söderqvist and Chetty 2013), closeness (Kontinen and Ojala, 2011; Jack et al., 2004), and trust (Söderqvist and Chetty, 2013; Kontinen and Ojala, 2011) appear to be important attributes of the participants' strength of ties, there was also evidence in this research that the role of the quality of business interaction was crucial in defining the strength of ties. Based upon these attributes, the analysis of the participants' network demonstrated that the strength of their network could be charted along a continuum. This tie continuum was found in all of the cases under study. The data clearly showed that some network ties of these female entrepreneurs were placed midway in terms of sufficient levels of strength. Building on the previous chapter's discussion, the continuum characteristics of female entrepreneurs' strength of ties, are summarised in Figure 7.2.

The stronger ties, therefore, are defined as those ties that provided greater knowledge, closeness, trust and quality of business interaction between the female entrepreneurs and their ties. These ties were characterised by having knowledge about business needs and concerns, and developing a good level of closeness in terms of respect and supportiveness. They are also characterised by their willingness to follow-up contacts and their responsiveness to the needs of these female entrepreneurs. As well, these ties included a high quality of business interaction, which strengthened over the time. They played an important role in securing different resources and impacting on the way of thinking of the participants. The other characteristics that these ties demonstrated is related to developing trustworthy relationships at the level of relying on the other's capability, experience and skills and discussing business-related information.

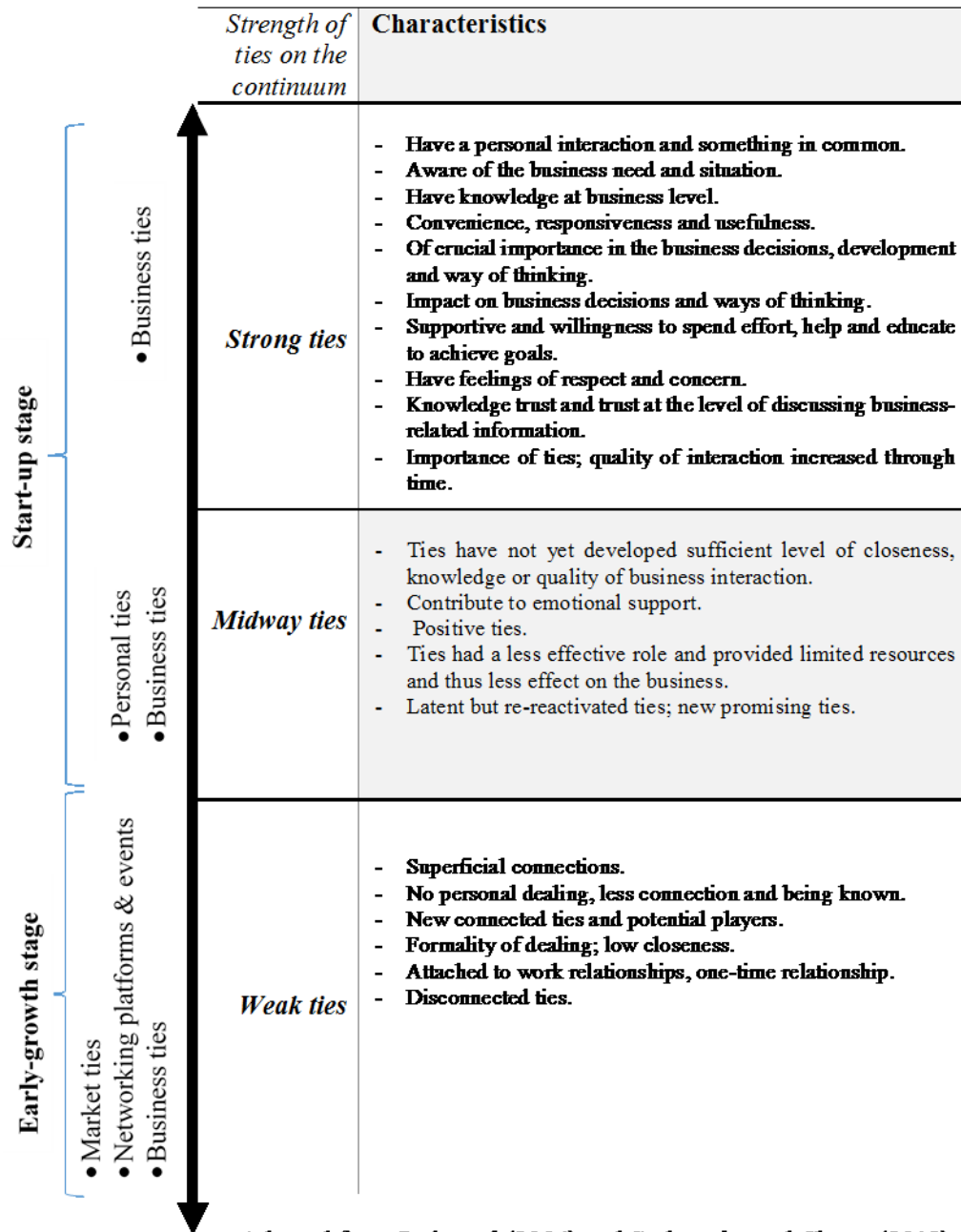
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The weaker ties of the participants that fell at the low end of the continuum, were superficial ties, where parties display a low level of emotional investment (Dubini and Aldrich, 1991), trust, knowledge about each other (Söderqvist and Chetty, 2013; Jack, 2005) and quality of business interaction. These ties were described by these female entrepreneurs as being business relationships without feelings of caring, supportiveness and demonstrated high formality in their dealings (Dubini and Aldrich, 1991). The participants' weaker ties were mainly attached to work relationships, disconnected ties and one-time relationships, and were marked by a high degree of caution in their dealings (Söderqvist and Chetty, 2013).

The ties that are located midway on the female entrepreneurs' continuum are characterised by including a mix of strong and weak ties attributes or they did not develop a sufficient level of strong ties (Söderqvist and Chetty, 2013; Jack et al., 2004; Perry-Smith and Shalley, 2003). Those ties were difficult to judge given that they were described in a positive way but did not prove a sufficient level of closeness, knowledge, trust or quality of business interaction. They were latent ties ready to be re-activated; new promising ties and had a limited extent, which was restricted the provisions of encouragement or sharing some ideas. They were also described as tie having less business affect as they contributed mainly through emotional support.

Some other participants' network ties were difficult to judge also given they included mixed attributes of strong and weak ties. These ties were described in the following ways: 1) As having an important and high level of business impact, given they provided a main financial or brokerage contribution; however they were primarily neutral in terms of value their dealings were formal and were likely to be replaced if a better contacts were identified . 2) Being personally known, respected or a friendship tie; however, when it came to business they showed a high level of formal dealing. Thus, it is hard to confirm whether those ties within the participants' network sited midway along the continuum were strong or weak ties.

Figure 7.2: The participants' strength of tie continuum



Adapted from Jack et al (2004) and Söderqvist and Chetty (2013)



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The continuum of the strength of ties of the female entrepreneurial participants emerged after placing their ties against the characteristics of the strength of ties. Although the data indicated that the four attributes appeared in all the groups of ties, the most common strong ties to emerge on the continuum are presented in Figure 7.2.

A cross-case analysis indicated that the weaker ties attributes appeared within the market ties including clients, distributors, firms, agencies and networking platforms and events group, which they located at the low end of the continuum showing the strength of ties (Figure 7.2). It appears that the high formality and lack of knowledge and closeness affect the strength level of these ties.

The analysis also showed that most of the personal ties that included family, friends and previous work colleagues, were located at the mid-point in the continuum of the participants' network strength of ties Figure 7.2. An important similarity among the female entrepreneurs was the degree of strength in their personal ties. The analysis indicated that family had a less limited role and a low degree of quality impact on their business. For example: *'They gave moral support, I mean, more emotional support, not financial or technical support, it's more emotional support' (F9); 'No help, they listen to me only ... honestly, their support was more emotional support' (F13)*. Also, F10 commented:

*'They gave more normal support but not in business depth. Like my husband and my father they're a really big support, but they didn't actually add value to the business itself' (F10)*.

However, the family ties were not less relevant in an absolute sense; some family members appeared as a strong tie. Indeed, some family members were business partners in four cases (F4, F11, F13 and F14). Two of these family business partners were strong ties, namely F11 and F13, and the others were two located at the mid-point due to the limited quality of their business interaction. For example: *'He was a partner in the company when I started ... now, he is still as a business partner, but in terms of work, no, nothing' (F14)*

As far as friends and previous work colleagues were concerned, most cases pointed to the low quality of business interaction given their limited role and relevance to the focus of the business. For example, F14 explained:

*'I have some individuals and I have friendly relationships with them and you love them and everything is good with them, but when I talk to them about business, I don't get benefits ... I was a project manager, or technical person, so I did not get benefits from these relationships, because I was within a specific team and how many were they? A few'.*

Thus, it was evident that personal ties had shown greater closeness, trust and personal knowledge; however, they were less effective in their role in the business. Although the participants were divided when describing their family, friends and previous work colleagues, the majority and most common findings suggest that these ties did not develop high quality of business interactions and, therefore, most of them were located midway along the continuum of strength of ties for the female entrepreneurs.

An analysis of the business ties, including people in the same field such as professional ties with other entrepreneurs, CEOs, mentors, support organisations, professionals and business partners, shows they were scattered along the strength of ties continuum (Figure 7.2). The cross-case analysis showed a high level of tie strength in some of the female entrepreneurs' business ties and some others had not yet developed a sufficient level of quality of business interaction, closeness, knowledge or trust. Thus, all attributes of the strength of ties appear in business ties of the participants (Jack et al., 2004). F9 gave an example:

*'The relationship between the entrepreneurs is not just informal and it's like advice, some companies like [other entrepreneur's firm] for example, we work together ... so, some of them we established some of the business relationships with, so the relationship here between my business and [other entrepreneur's firm] for example is stronger than other companies'.*

Although the analysis of many business ties, which were built during the first days of starting up, demonstrated that they started as a weak tie, after a short period of time they developed to be a strong tie, particularly with business incubators and

accelerators, mentors, professionals and some CEOs and managers. Thus, these ties within the participants' networks were better understood as 'new strong ties' (Elfring and Hulsink, 2007, p. 1857).

Both the incubatee and independent female entrepreneurs built this type of new strong business tie. These new strong ties of the incubatee female entrepreneurs were typically built with mentors, CEOs and managers, other entrepreneurs, business organisations (i.e. incubator or accelerator). F3 commented on her relationship with a CEO as: *'It started formal, yes, but it turned to friendship, because how frequent we talked about work and he did offer and support a lot'*.

The new strong ties for the independent female entrepreneurs were built with: 1) organisations, CEOs, managers and mentors, which they met through entrepreneurship competitions, as in F2 and F5 cases. 2) Business partnerships and firms within the industry as in the F7 case. 3) Professionals and firms in the industry as in the F13 case. 4) Business partners and other business owners as in the F8 case. Thus, this research suggests that the female entrepreneurs' business ties ranged from weak ties at the low end to strong ties at the upper end of their strength of ties continuum, as appears in Figure 7.2.

### **7.3.3.1 The strength of ties in the start-up networks**

In the analysis of how the continuum developed, it appeared that although weak ties built since the start-up stage were still in evidence, the midway ties and new strong were dominant at this stage. Figure 7.2 illustrates and presents the participants' network strength of ties along a continuum of development. Personal ties appeared as midway ties and business ties, at this stage, ranged between midway to the newly formed strong ties. Many of the initially formed weak ties at this stage developed into strong ties. These new strong business ties were of high importance and had impact on their businesses since the start-up and demonstrated the knowledge, follow-up and supportive attributes as well as high level of trust through this stage.

### **7.3.3.2 The strength of ties in the early-growth networks**

When the female entrepreneurs grew their firms, their network entailed some new strong ties. However, the networks were dominated by weak ties, as appears in Figure 7.2. These ties contained market ties, networking platforms and events and some new business ties. Therefore, this research concludes that the continuum of the participants' strength of ties is dominated by midway and new strong ties at the start-up stage; however, it included more weak ties as their business evolved into the early-growth.

### **7.3.4 The development of density in the networks**

The interconnectedness, which reflects the degree to which the actors within the network know each other, represents the other structural dimension that provides insights about the density of the participants' network (Hampton et al., 2011). The participants' accounts were examined for the extent to which the actors within the network were familiar with each other. The cross-case analysis showed that the female entrepreneurs' network density decreased through time where links are high among each group of their start-up network ties; however, it decreased among their early-growth network ties.

#### **7.3.4.1 Density in the start-up network**

The data demonstrated that when the participants first started, their network ties involved limited personal ties and a small circle of business ties, where some actors within each group of these ties know each other. In the description of their network ties, the entrepreneurs indicated the presence of some direct knowledge among the personal ties, particularly among previous work colleagues. F11 commented: *'All of those know each other, because we were working at the same company'*.

The interconnectedness appeared among the actors within the business network at the start-up stage. The presence of relationships between the business ties was high as some participants described this group as a community, F2 stated:

*'When we started, we participated in a competition, in this competition we got the first prize, this helped us to enter in the start-ups community ... I still meet*

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*them ... we became a community ... we got to know this community and people who are entrepreneurs, investors, CEOs and those who are studying in technology, those who want to change ... once you get to know this community everyone starts to recommend and introduce to the other people'.*

In addition, general knowledge appeared among some business ties, particularly the bodies that provide different types of support to the entrepreneurs. F5's comment reflected this: *'The organisations that I mentioned, all of them supporting entrepreneurs, so, definitely they know each other in general'*. Those bodies mostly have mutual interests and sometime coordinate with each other to reach entrepreneurs through each other. For example, F14 commented:

*'I heard that there is [business incubator X], so I went, they told me about [Y organisation] and I went to them, also, they told me in that incubator there is an entrepreneurship competition, so, I applied'.*

Similarly, F10 explained:

*'[Accelerator X] also connected us with people who make some courses for financial, access to finance especially for women, there is a lot of support for a women. So, those organisations go to [accelerator X] and presented them and [accelerator X] started to contact all the women tech entrepreneurs'.*

This interconnectedness among the network ties, particularly the business ties, of the female entrepreneurs was demonstrated through the deep ties that they built with some actors who introduced them to some other actors that they knew or worked with. For example, F9 stated:

*'Gradually we built a relationship and I met some of other his colleagues'. In another example, F7 stated: '[firm X] helped me to do a mapping with another ... university ... they know the [firm X] profile very well'.*

What differentiates the start-up stage is the presence of relationships among the actors within each group; however, the relationship across the actors from these groups was absent. It appeared that the presence of intense relationships was high among the actors whom the female entrepreneurs knew within the technology entrepreneurs' community, which included organisations, firms, investors, other entrepreneurs, CEOs

and managers. The cross-case analysis showed that the participants had built a few deep business ties when starting up, where through time many of these ties had helped connect the women to other business actors within that network of deep ties. On the other hand, links between ties from the business and personal networks were absent. As a result, this research suggests that the participants' network ties are characterised by within group density; however, degrees of low density appeared across the groups that were included their start-up networks.

#### **7.3.4.2 The density of early-growth networks**

When the female entrepreneurs moved into the early-growth stage, the interconnectedness among the business ties changed into what appeared to be industry clustered ties. These ties increased gradually during the transition stage from the start-up into the early-growth stage in those female entrepreneurs' networks, where most of them were knew each other as they were active in the same industry. A comment from F3 indicated:

*'Most of them know each other, so, it's, um, because they are in the same industry anyway'. F6a's comment reflected this also: 'You have to know that Amman is small and all of those people are friends, all of them know each other personally and in the work'.*

Organisations' networking events attended by those female entrepreneurs facilitated and helped to create this community. F11, also, explained:

*'Through [accelerator X] and their events, we got to know many people especially those from Jordan, honestly, either investors or companies. At most of the events either [accelerator X] or others, we saw the same people, those who are in ICT, they are here and there. So, the idea is that I got to know lots of people, all those who are in ICT in Jordan. I can't define where originally I met those people, as you meet the same people ... now I feel that I have met all those who work in ICT in Jordan'.*

Despite the increased interconnectedness among the business ties of the participants, it was low among the other ties involved in their early-growth networks, market and networking platforms and event ties. These ties included actors from in and outside

Jordan. In the analysis of the description of these network ties, the female entrepreneurs indicated the limited and in some cases absence of relationships among the market ties and some of the new business ties. The following comment from F11, and reflected this:

*'We are no longer in the IT sector, when I started my focus was in developing the product, so, I got to know people in the field of IT ... now, no, I know people in different fields such as people who are interested in publication, telecommunication companies, or airline companies. So, I am in a larger group than when I started'.*

This suggests that the network at this stage of the business is characterised by the presence of actors who mostly do not have ties with each other, and the degree of these female entrepreneurs' network density is then reduced.

### **7.3.5 Development of centrality in the participants' networks**

The other structural dimension of the entrepreneur's network appears when the entrepreneur him or herself would broker their network ties (Aldrich, 1989). Cross-case analysis of the participants' description of their network ties together with whole case transcripts provided evidence from the majority of the cases, and demonstrated that network centrality started at an early-growth stage in the women's businesses.

#### **7.3.5.1 Centrality at the start-up stage**

The analysis suggests that although the female entrepreneurs were trying to act as broker at the start-up stage, the centrality during this stage was limited. F10 explained:

*'From the start we tried to link people together, especially that, again, when we incubated at [accelerator X], whoever needed something we hook them up with whoever they want if I know [someone]'.*

This role appeared to be restricted to sharing information about other actors within their networks rather than playing an actual role to bring two actors together. F6a commented:

*'At the beginning we were very small, we didn't know anyone, we were tiny, we would not, no ... so, we would if someone ask us where you are distributing,*

*we would tell them this is the company contact detail and they are free if they want to go to the next level or not'.*

Centrality within the participants' network and the focal entrepreneur acting as a broker at the start-up stage was affected by the nature of the business at this stage. The participants' focus on business model development and facing the challenges of the start-up phase were the priorities for these female entrepreneurs and reduced the ability to be a broker for other actors. A comment from F7 explained:

*'During the start-up stage my main concern was to understand the solution we are offering, it was mostly that I need really to educate myself and to understand that what I'm doing is a proper fit, because it was not something that I used to do or I fully understand. It was mostly educational to me and my team making sure that we understand what we are doing, rather than playing a role in connecting people'.*

#### **7.3.5.2 Centrality and the early-growth stage**

When the female entrepreneurs moved into the early-growth stage, there was evidence that they started to broker relationships between other actors in their networks. F3 claimed: *'If anybody asks me to introduce them, I would happily do that, so, the more we go into the business, the more it's presented'.*

Based on the study participants' descriptions of their network ties, an analysis of the type of ties that were linked together show that although there were link between different actors, the participants acted as broker among two groups of ties. These brokered ties included actors from business and market ties. This may suggest that their ability to be a broker to other two actors started at the early-growth stage given that these ties increased (i.e. business ties) and expanded (i.e. market ties and networking platforms and events group) after they started. The participants' broker roles were most common among:

- 1) Broker between other entrepreneurs and different parties such as mentors, freelancers and potential investors and clients. For example, F11 stated:



*'I got to know many start-ups through [accelerator X], for example, [start-up firm Y], I introduced them to [organisation W]. Recently there was a meeting and they started to work together ... also, I linked another start-up with a publishing house. Also, I linked [K], they are also start-up firm, with [organisation W] and reading clubs, because I know many of these clubs'.*

A comment from F3 summarised this:

*'I have introduced a lot of start-ups to my investors, if they want to invest in them. For example, I have introduced two of the start-ups to the agency we worked with. I have introduced people to mentors as well'.*

2) Brokering between clients and other actors including other companies and service firms such as financial firms and recruitment agencies. F8 explained:

*'I worked in the past with recruitment agencies and one of my clients was looking to hire people, so, I introduced them together ... others, they wanted to display at that conference, so, I know that guy who runs this kind of conferences, and so, I introduced him to them, so, he got a better deal or something and so on, so whenever I can help, I help, introduce people'.*

The centrality in some cases, particularly among the customer-focused network firms, appeared to be a business norm. A comment by F7 explained this:

*'Basically I do consulting for other companies as well, because I meet with them on regular basis, I check, for example, what they are doing, how they are doing it, I call the people in their behalf, so, they can support them, this happens always, but not really, it's business norm'.*

F8 gave an example:

*'One of my clients needed services, just he needed things like recruitment services, financial services or they wanted to meet someone or an organisation I knew about, so, I mad that introductions or to an investors'.*

Similarly, F2 commented:

*'Once a customer asked me to do web design and development, normally I have never worked as a web designer, but I know designers and developers, so, I connected them with a company called [X]'.*

Although the analysis indicated that the pre-entrepreneurial experience of some participants helped them to undertake this role of connecting between their previous networks, being a broker within their network started at the early-growth stage of the business. The participants indicated that acting as a broker to others within their networks was determined by the increase in their own network of having different ties.

Having ties with different actors at the early-growth stage increased the probability that these entrepreneurs could provide a channel linking other parties. Some participants claimed:

*'I have started to connect others together now as I got to know people in other fields. When I started I knew people just in my field of work, in IT ... now, I know people in the field of IT and others, other entrepreneurs, CEOs, who are the investors in the market, which are the firms that we could collaborate with' (F11).*

*'In the start-up stage you are always, um, you are more focused on your own business and all the contacts that you want to build. Then, after that, you will become more comfortable with the contacts that you have, you start introducing contacts to other people' (F9).*

F4 argued that increasing the contacts based on good knowledge and credibility, also increased centrality within those female entrepreneurs' network. She stated:

*'You start knowing people, people start knowing you, your works become credible, and then when you start introducing people together that would be more credible and people believe in what you say because they now know you'.*

This research, thus, concludes that centrality of the focal female entrepreneur within her network began at an early-stage of growth. The findings also revealed that the development of the centrality role within the participants' network, resulted from the increasing diversity of their ties where the natural requirements of the start-up stage put a priority on developing the business idea and business ties rather than on being a broker to other actors. F6b summarised this in the following comment:

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*'Honestly in the start-up stage we were just focusing on the product, I'm sure that we did sometime, link people ... but nowadays of course more because your database is now much larger'.*

The above discussion of the participants' network diversity, reachability, strength of ties, density and centrality development process, represents the most common patterns that emerge across most cases. However, there was evidence of some differences in the development process of the network structural characteristics in one case, which is F12. This case did not show the same dynamic nature as appeared in the other cases. The development of the network ties diversity and reachability of this case was limited. Fundamentally, the ties that she used to start and grow her business were limited to some family members, freelancers and other entrepreneurs. She explained:

*'When I started, my husband, my sister and the freelancers that were working with me ... then I went to [accelerator X], and I just got to know a group of entrepreneurs and other new freelancers start working with me'.*

Also what is noticeable in this case is the high interconnectedness among her network actors and the presence of many links among her personal and business ties. This interconnectedness between her network ties increased as the time went on. She stated: *'She started to work with him, she works with [an entrepreneur] and [husband]. My sister knows [freelancer A] and he helped her, and [freelancer B] also worked with her ...'*

In terms of the ties' origin, her network appeared to be dominated by direct ties, as well as those whom she was able to reach through a few introductions during the early stages. Thus, her network did not show development in terms of the ability to reach through different third parties by the early-growth stage. She commented: *'You know, what I found just now while I am talking to you, I discovered that all these relationships that I have were through [accelerator X]'s environment'.*

The data suggests that the limited development in her network structure originated from the low variety of the ties that she built through time. The inability to increase the ties and diversify them limited her ability to find ties within her network to reach

new ties. In addition, although she started to play a broker role between her personal ties (husband and sister) and the business ties (other entrepreneurs and freelancers), this increased the interconnectedness in her network ties, without bringing new ties.

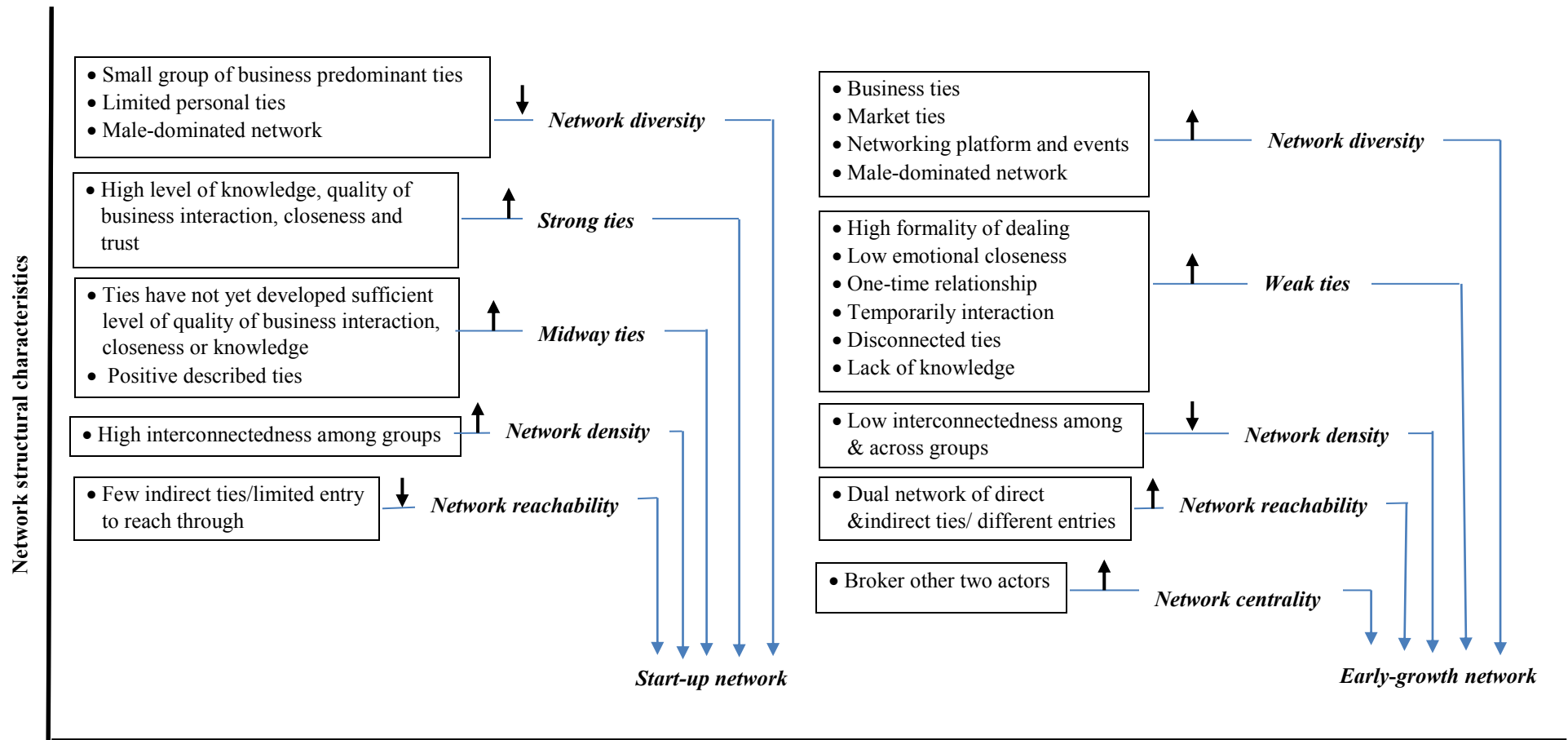
The low degree of diversity in this case's network was due to the nature of the business and the family commitment as she argued:

*'The nature of my business is affecting my ability to have lots of relationships. I did not find people specialists in my area that can help me out. When I went to [accelerator X] firstly, I did not get much benefit. Secondly, I'm not that social a person because of my commitments. I have lots of family commitments, my kids are a big responsibility, and I can't accept the idea to sacrifice them for the sake of my business, no. You know, when I started my business I was so busy, their grades at school dropped, you can't imagine how much that affected me'.*

#### **7.4 The network structure development model**

One of this research's important contributions is the exploration of the network development model of the female entrepreneurs in technology-based firms in Jordan where there is an absence in previous literature of studies examining the networking behaviour of female entrepreneurs in Middle Eastern societies. In addressing their network evolution from the start-up into early-growth stage, the research revealed a dynamic nature in the network structural dimensions. Building upon the cross-case analysis, discussed in the above sections, the most common theoretical model generated is in Figure 7.3. This model brings out for the first time the dynamic nature of the structural dimensions: diversity, reachability, strength of ties, density and centrality, which shaped the network that the female entrepreneurs relied on through the early development stages of their businesses

Figure 7.3: The development process of the participants' network



Firm development phases

Source: Researcher

The business network appeared to be the main source from which the female entrepreneurs utilised ties when starting up their firms. Personal network ties were present within the entrepreneurs' network but they were, however, characterised by the limited extent to which they were used in order to build and grow the entrepreneurs' business. The majority of ties instead stemmed from a business network, which was more prominent in the participants' network since the start-up began. It appears that the female entrepreneurs utilised different business ties; there were, however, a limited number of each type of ties, which decreased the diversity in the networks, as appears in Figure 7.3.

The strength of their ties, as the model in Figure 7.3 shows, is dominated by using the new strong and midway ties at start-up. The lack of the business impact of the female entrepreneurs' personal ties affects the strength level of these ties, which were located at the midpoint in the continuum of the strength of entrepreneurial ties. The start-up network of the participants, in addition, included the new strong business and midway ties, which appeared to be more important in obtaining the resources their start-up needed. On the other hand, the female entrepreneurs' start-up network ties used few entries to access other ties, which decreased the reachability in the network. The model also shows high interconnectedness among the actors within either business or personal ties, in what appears to a high dense group. Social knowledge increased the interconnectedness among personal ties; however, general and direct knowledge increased the presence of links among business ties.

As the female entrepreneurs' business moves into the early-growth stage the variety of ties appears to be dynamic in nature which develops with time. The model, Figure 7.3, suggests that more diverse network ties increased during the early-growth stage of building the business as new groups of ties are added to the network. Martinez and Aldrich (2011, p. 24) argue that 'although diversity provides advantage at the beginning of the entrepreneurial process, it appears to become more important as well as more common at a later moment in the process'. Such diverse structures at the early-growth stage include exchange ties with industry firms, clusters and networking

associations (Martinez and Aldrich, 2011). At this stage of the entrepreneurial venturing process, market ties (Jack et al., 2004) and networking platforms and event connections as well as business ties were active (Martinez and Aldrich, 2011). The majority of these network ties were weak ties (Martinez and Aldrich, 2011) as they were characterised by a high degree of formality and lack of knowledge of each other, in terms of the relationships associated with performing the work.

The development process of the female entrepreneurs' network, as it appears in the model, Figure 7.3, implies low interconnectedness among and across the actors at this stage, which decreases the density within the network ties. Despite this, the participants' network ties entailed a group of interconnected business ties that appear to be industry-focused ties. In this context, Hampton et al. (2011) argue that the male-dominated network might encourage female technology entrepreneurs to know and become known within a close community of dense networks, which could be utilised to obtain many benefits (Hampton et al., 2011). As such, the male-dominated network that was present over time within the participants' networks might have encouraged them to keep their focus on using the industry community to obtain benefits, with the industry networking events utilised to enter this network.

This model suggests, also, that the brokering activities within the participants' network appear in two directions in the early-growth stage. The actors who acted as a broker increased in these female entrepreneurs' networks through time. Therefore, the ability to reach out through different third parties within the participants' network increases their network reachability during this stage of venturing. On the other hand, it demonstrated that the female entrepreneurs started to broker other actors in their networks when they moved into the early-growth stage. This ability to start brokering another two parties appears as a consequence of increasing the diversity of the network ties beyond the start-up stage, with its focus on developing the business idea as a priority, limiting this role when they first started.

The development model of the structural dimensions of the female entrepreneurs' network in this research appears to be different from previous studies in different ways, as follows:

***Development of network reachability and diversity***

In the entrepreneurial network development literature, the structural model suggests that the entrepreneur's networks is more of an unplanned network, in which social ties are highly dominant in the early stages of their business. Further their networks become more planned and 'calculative' with greater market and business-based ties when the business second ventured (Grave and Salaff, 2003; Hite and Hesterly, 2001). Within this literature, the personal ties including the family, friends and previous work colleagues appeared to be the main gateway for the entrepreneurs at the start-up stage (Semrau and Werner, 2014; Hampton et al., 2009; Lechner and Dowling 2003; Hite and Hesterly 2001; Larson and Starr, 1993). Despite that, some recent studies' findings have mentioned the increasing role of business ties at the start-up stage, personal ties, previous work colleagues (Soderqvist and Chetty, 2013) and family, as still playing an important role for entrepreneurs in securing new resources (Elfring and Hulsink, 2007), either directly or indirectly through additional actors who might provide the needed resources (Semrau and Werner, 2014; Jack, 2005; Jack et al., 2004; Steier and Greenwood, 1999; Larson and Starr, 1993).

This study found, however, that the extent and presence of personal ties were not precisely the same as described in the literature. Instead, the extent and reliance on business ties since the start-up stage, appeared to be more dominant. The female entrepreneurs' business networks studied showed greater utilisation of direct and indirect ties to obtain start-up resources.

***Strength of network ties along the continuum of development***

The strong-tie continuum that is suggested within the entrepreneurial network literature, locates the family and friends at the upper end of the continuum as strong ties (Jack, 2005; Jack et al., 2004); customers and potential players' ties are located at



the lower end of the continuum and viewed as weak ties (Söderqvist and Chetty, 2013) and business relationships are located between the two ends (Jack et al., 2004). In the case of these participants in this study, the strength of ties' continuum is relatively different, as most cases under study proved that the family, friends and previous work colleagues are located at the midway point. Fundamentally, the lower business impact of the personal ties has an impact on the strength level of these ties.

### *Network density*

While the evolution of network density in this research matched the findings of previous research as it decreased through time (Tan et al., 2014; Martinez and Aldrich, 2011; Hite and Hesterly, 2001); the density of the female entrepreneurs network studied appears to occur within group density. Research on networks suggests that the entrepreneurs' network is characterised by high density as personal knowledge is high amongst all the actors at the start-up stage (Martinez and Aldrich, 2011; Hite and Hesterly, 2001). The presence of two groups of network ties within the participants' start-up networks implies high density among each group; however, low density occurred across each group since relationships between these two groups do not exist.

The analysis pointed to some evidence which might have affected these difference:

This research, **first**, suggests that the backgrounds of these participants reflect that they have a good understanding of the work conditions and have a strategic way of thinking about what is beneficial for their start-ups. This appeared clearly in their way of searching for business resources, where business needs were the motivation to build connections and define who was included in their networks. F10 stated commented:

*'If I wanted a certain study for example, I ask a certain mentor who knows about this subject or market segment ... and they usually have studies that they can give'.*

Along the same line F2 explained:

*'If I don't know or I'm interested to know, there is more than one way. If I know that he will come to a conference or seminar or any event, I will go for sure ...*

*for example, I was so interested to get to know the marketing manager of [firm X], so, I met him in [conference X] and I took his business card, his name ... we talked and I asked him through our conversation about ... so, he told me all the strategies, these strategies were so complicated ... and he promised me if I finished some work ... to send it to his email directly and he will consider me and tell me if it will be posted or not or how I can improve it. So, it was good to know that directly from him'.*

Actually most of the participants worked in the private sector before starting up: eight of them worked in different managerial positions; three were self-employed (freelancers) and three worked in private companies. In addition, three owned their own business and the business that they are running currently in the technology sector represents their second or third business. The pre-entrepreneurial experience that the female technology entrepreneurs possessed is critical in shaping and explaining their entrepreneurial process (Cooper et al., 2011). This research suggests that these participants were exposed to the process of how businesses manage and plan their relationships. For example, F7 stated:

*'I had to go to [firm X], I told them, listen, I have an issue that we made up our study based on one, two, three, when we started working we figured out that what he, or the information provided was not very proper and I need your support. So, [firm X] helped me to do a mapping with another ... who has done something close to'.*

Although most of the participants did not benefit from their previous networks, particularly with their previous work colleagues, most of them succeeded in transferring their human capital (knowledge and skills) to their business. This helped them to define who could be beneficial to their business. A comment from F9 provided an example of this:

*'Because I felt that, um, first not motivated by financial support from the seed investment fund because I have been working for long time and I'm not a fresh graduates who is struggling, I have some savings I could really use my saving to build my company, but my main motivation was the network and the credibility that they [accelerator X] would add to the business and the knowledge and the expertise that they have in the technology field that I wanted'.*

F10, also, stated:

*'But, because this is not my first business, so, I don't have problems about opening a business, I know what to expect and how to do it. But they [accelerator X] connected us with people ... they connected me with new people, um, they work in and own big companies, they know exactly who can help me out in this or that specific matter'.*

**Second**, the research suggests that lack of required knowledge and resources amongst these female entrepreneurs and their personal ties pushed them to seek help from other actors. The data indicated that the lack of knowledge among such ties was in two main areas: business management knowledge and technology knowledge. Personal ties did not appear in most cases to be a reliable source for getting business management advice or help. Reflecting this F14 commented:

*'My family, I mean, in terms of business, they don't know, because none of them has a business, so, when I come to ask them about a case, like, should I deal with this client in this way or not, or any other thing, they will not benefit me'.*

Another comment from F3 on her friendship ties:

*'My friends, they're employees most of them, so, I think ... there is a gap between us, it's difficult for them to understand what I go through every day at work'.*

Similarly, F1 commented on her search for start-up financial resources: *'Actually, I depend on the competitions and grants because it was the only way that I can use at that time'.* In another example, F2, got advice from those who had just moved into the early-growth stage and although she relied on her father to get some business advice, she claimed:

*'The thing that I like to talk to them about, are my problems, why? Because we are facing the same problems and challenges, so, you feel good at the end because you hear from the person who is in the front of you that he faced the same difficulties or maybe a lot more than your challenges, so, you feel good at the end when you talk and you just open up and you find that you are not the only one, there are many people suffering even more than you and now they are doing really well or probably they failed, it doesn't matter, but in the end'.*

*I'm doing the same. So, for me I like to talk more with other entrepreneurs and other CEOs'.*

In addition, the nature of the business might have affected the type of ties that are required during the early stages of building the business. Technology-based firms are characterised by a high requirement for a variety of tangible and intangible resources from a wide range of resource providers in order to establish a technology-based venture (Narvekar and Jain, 2006; Elfring and Hulsink, 2003). This pushed many female participants to search for new ties, particularly those who from outside the technology sector (Elfring and Hulsink, 2007).

In fact, the analysis reflected that some cases were in possession of a good diverse network before they started; however, they were not able to transfer the different kind of capital, particularly network ties, which they built up before starting up. This comment from F9 reflected this:

*'In my previous job ... we were involved in three main sectors. One of them ... I am still in contact with all the people that I have known earlier ... but the other two sectors that are unrelated now to my business ... these two sectors, the contacts that I have there in both these sectors, are still there, of course, and I still meet them ... but I have a different level of conversation with them or different topics to discuss because they're not in the online business and they're not in the IT related industry ... so, no help in this business, no'.*

Similarly, F10 commented: *'There are different people, but mainly in IT, but again because I have been in business in different area before I started. So, I know different people'.* This suggests that these female entrepreneurs who they moved into the technology sector found it difficult to use their previously built networks.

While most of the female entrepreneurs indicated a limited presence of previous work ties in their network, they pointed out the irrelevance of these ties in their current business. F5 commented on the nature of help received from her previous work ties: *'From my previous work, no anyone, because when I started to work, I worked at trading company not related to what I'm doing now'.* Similarly other participants commented: *'Because their work is so different from mine, so, I don't get things' (F8);*

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*'They always give me the feeling that I'm great and I feel that I'm the best one, because all of them employees ... if I sit with them, I will not improve myself' (F2); 'There was a gap between us, it was difficult for them to understand what I go through every day at work' (F3).*

For those entrepreneurs who their backgrounds were outside IT community, Elfring and Hulsink, (2007) found that in pursuing opportunities and securing resources the friends and previous work colleagues appear to be unimportant. They found that the newly formed ties including acquaintances that entrepreneurs meet through industry events are more important in obtaining the required resources at the start-up stage.

This study also suggests that the use of business ties, particularly business organisations and other technology firms within the industry, from the start-up stage may be responsive to the participants' search for validation of new business ideas. It is well known that technology-based firms have a particular requirement to obtain legitimacy, especially at start-up (Elfring and Hulsink, 2003). This appeared in the data into two directions. On one hand, some participants would utilise the business ties to add credibility to their business. F1's description to her tie with a manager reflected this: *'The manager for the incubator, he helped ... he is the person who introduces me to the [X] grants, because they trust him and he selects good business ideas'*. On the other hand, some participants would use the business ties to ensure how beneficial to their network inclusion or exclusion of other ties might be. F10 reflected this: *'It's also through [Company Y], because I don't know who exactly can help me out and they can point them out'*. Also, F6a stated:

*'I know him as a friend, but when I saw him in [Company X], he gave like a lecture, I liked his way of thinking and his work style and then I talked with him to be our mentor' (F6a);*

**Third**, the situation in Jordan has some socio-cultural characteristics which might have affected these findings. GEM-MENA's report indicated that Jordanian entrepreneurs are less likely to secure finance from their family members (Stevenson et al., 2010). Using informal sources to secure seed funding sometimes is difficult in Jordan

especially with the low GDB per capita income, which in 2014 reached \$11,782 in Jordan. Moreover, the World Bank Report found that female entrepreneurial firms in Jordan use formal resources to finance their business more so than their male counterparts (Chamlou, 2008). This may suggest that women tend to use the formal direct business links in their network to secure the necessary financial resources to start their business.

On the other hand, women entrepreneurs still feel the effects of social stereotyping that sees her economic role as a traditional rather than professional one. This may suggest that female entrepreneurs in Jordan seeking resources and help prefer formal and direct entry through business ties. F6's comment reflected this:

*'I typically don't like social introductions too much because I feel like, um, I don't like to be introduced to someone within a social structure, because they were kind of, um, although I know this is how businesses are formed, I feel like as a woman we're more, um, we have a little bit more, um, something we have more to prove, we need to appear even more professional than the average man to get the same amount of respect. So, I try very often ... if somebody just says, Oh, I know so and so, I can introduce you, I prefer that we are introduced for example in a meeting or if he sends him a direct email and then I can follow up. Yes, I don't like to be introduced in a social event, because I feel like it's, I don't know'.*

#### ***Development of network centrality***

While the evolution of network centrality has previously appeared to be dynamic (Hampton et al., 2011; McGowan et al., 2013), this research revealed that the female entrepreneurs' centrality through being a broker to others within their network starts at an early stage of growth. Studies of the evolution of centrality as an aspect of the entrepreneurs' networks is limited within the literature and a well-developed understanding of the evolution to these structural characteristics is lacking.

According to this research network centrality appeared to be affected by the nature of start-up requirements and related to increasing the network ties that they have with different actors. In this context, Tan et al. (2014) argue that the more ties the entrepreneur has with others, the more central a role can be played; however, they

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found that this central role weakens when there is high density and interconnectedness among the network actors. This suggests that the cross-level dynamic of the network structural characteristics might have a role in the late appearance of centrality in the participants' networks.

***Development of gender composition in the network***

The previous literature indicates that female entrepreneurs enter more into network ties which include a greater proportion of women (Jue-ping, 2014; Klyver, 2011; Carter et al., 2001; Ibarra, 1993; Smeltzer and Fann, 1989). In studying the gender differences in the entrepreneurs' network at the start-up stage, Hampton et al. (2009) found more all-female entrepreneurial network ties within the female technology entrepreneurs' networks. As the firm grows to be more established, Hampton et al. (2011, 2009) and Klyver and Terjesen (2007) found that the female entrepreneurs' network tends to become a more mixed-gender network. This research, however, found that the network development amongst these female entrepreneurs is primarily focused on male contacts.

Male dominance in the networks of these female entrepreneurs reflects the influence of the nature of the technology sector, where it is well known that this sector is a male-dominated one. In addition to that, Jordan's technology sector has a very low level of female participation in the workforce. F3's comment reflected this noting that the economy:

*'Is dominated by males, specifically this industry, other than that the workforce in Jordan or the female representation in the Jordanian workforce is only eleven percent ... is very low. So, already we have too few females working and we have even fewer females working in the ICT industry'.*

This view was also reinforced by F7's comment:

*'I think most of the females they don't like, or, ok, you will find a lot of females who are programmers ... because they don't like to go out a lot, a lot of females, they will say, I will have to go and so on, I don't need this hassle, it's*

*really a hassle, our work is a hassle, it is up to you if you want to take this challenge or not as a person'.*

In terms of economic participation and opportunity, Jordan scored low in terms of reducing its gender gap, and was ranked at 128 out of the 133 countries covered (World Economic Forum, 2013). The utilisation of business network ties since the start-up stage, which appeared to be a more male-dominated network, had a direct effect on their network gender composition. The majority of the mentors, managers, CEOs, business partners and professionals that formed the business ties are male. Moreover, the industry events that those female entrepreneurs participate in from the outset form a male-dominated community.

This male-dominated context might have affected the way and the source that these female entrepreneurs relied on to build their start-up and early-growth network ties. As such, this provides another explanation of those female entrepreneurs' formal professional way in building network ties, where her limited ability to engage in this male-dominated industry might have encouraged them to utilise business organisations, professionals and networking platforms and events. The ability to build business industry networks for those female entrepreneurs in the male-dominated technology sector generates real benefits to the business development process (Hampton et al., 2011). This suggests that starting and growing a business in a sector where most sources of knowledge are controlled by men, requires female entrepreneurs to build and work within male-dominated business networks.

## **7.5 Summary**

This chapter, therefore, has identified the structural characteristics of the participants' network and the development model of these characteristics through their firms' early development stages. For the first time, and in Jordan as an example from the Middle Eastern societies, this research revealed the type of network structures the female technology entrepreneurs utilised when they searched for the necessary resources and help to start and grow their business. The findings demonstrated that some characteristics of the female entrepreneurs' network development model are



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distinctive. Thus, this chapter has addressed the first research question regarding how the network structural characteristics of the Jordanian female entrepreneurs in technology firms do develop. The next chapter, then, will address the second research question regarding the contents that these network structural characteristics secured for these female entrepreneurs' firms.

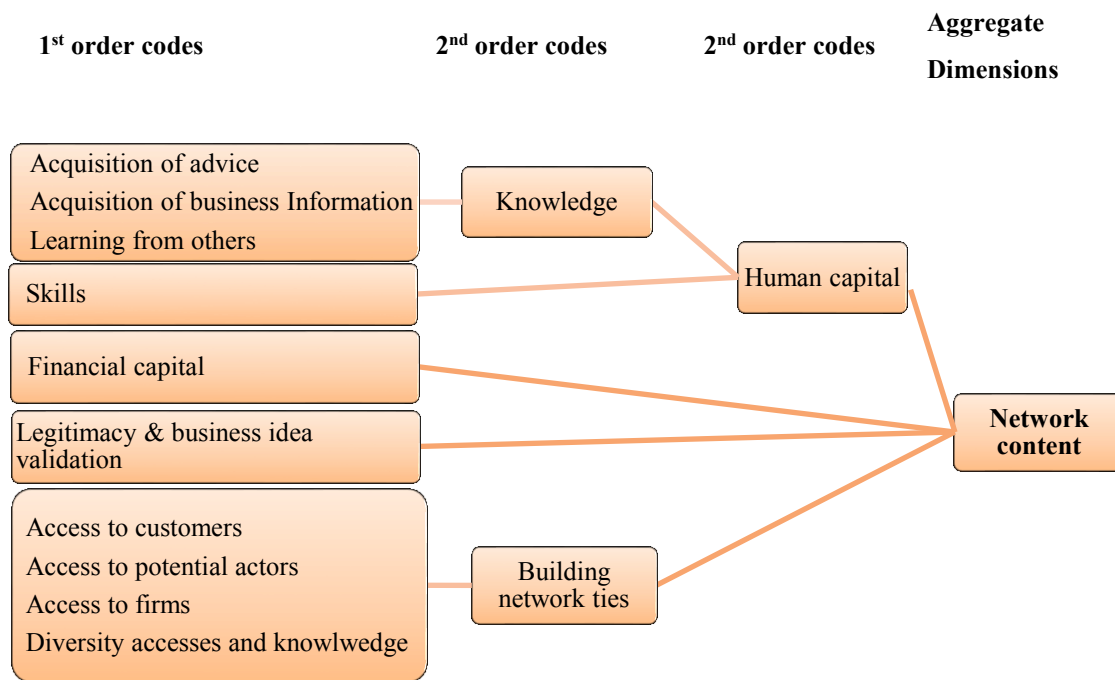
## **Chapter 8: The content of the network structure: the development process**

### **8.1 Introduction**

The previous chapter explored and discussed the development process relating to the structural dimensions of the female entrepreneurs' network. Based upon this development process, the next task is to bring out the content of these structural characteristics. An entrepreneur's network ties directly affect the entrepreneurial process through creating a pathway to obtain and access different content (resources). Whilst some studies within the entrepreneurship network literature have been carried out on the content of different network structures, the development of the content of these structures has been neglected. The argument in this research, then, is that changes in the entrepreneur's network structure throughout the firm's development suggest that different contents will be obtained and reached at each development stage. Based on an exploration of this development, female entrepreneurs can better manage strategically the development of their network ties.

This chapter presents and discusses the research findings that explore the content of the female entrepreneurs' network structure their firms' early development stages. Within and cross-case analysis generated a group of themes, which identified the content of the network's structural characteristics (see Figure 8.1). This analysis, therefore, addresses the second research question: 'how does the content of the Jordanian female entrepreneur's network structure develop to facilitate the start-up and early-growth of their new technology-based firm?' The foundation for answering this question is provided by analysing the content of the start-up network structures, which will be presented at the first part of this chapter, and then the second part of this chapter will discuss the content of the early-growth network structure.

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Source: Researcher

Figure 8.1: The research structure themes: network content

## 8.2 The content of the participants' start-up network

### 8.2.1 The content of the start-up networks' ties

The female entrepreneurs' start-up network ties, see Figure 7.3 in the previous chapter, include business and personal ties. The cross-case analysis indicted that these ties provided different contents comprising: human capital, financial resources, legitimacy and moral support. The next sections, then, reflect and describe contents of these ties.

#### 8.2.1.1 Financial capital

At the point of start-up, the cross-case analysis indicated that most participants, the founders of twelve firms, obtained different kinds of financial resources mainly from their business ties. The participants' financial resources were obtained in different forms: **seed fund investments**: e.g.: *'They financed, um, [accelerator X] put ten percent of the company and they paid for it' (F3)* and *'he [business partner] helped us with a bit of cash, cash flow until we got payments' (F8)*; **prizes**: e.g.: *'The thing that*

*we got started after I won the [organisation Z] competition and we got the first fund from this competition, and then we got started' (F1); awards: e.g.: 'I got twenty thousand dollars as an award from [Firm A]' (F5); or grants: e.g.: 'There are some donor agencies or projects in Jordan, [donor agency X], for example, that I took some money from [donor agency X] to finance the first batch of [the product]' (F4).*

The sources of these financial funds were business partners, incubators and accelerators or business and enterprise development organisations. In addition, through the incubators' and accelerators' events, the incubatee entrepreneurs had the opportunity to meet investors within the market when they first started. This helped some participants to obtain angel investments in their business models. F9 commented:

*'I presented at what they call the angel investment networking event ... where the objective is to put start-ups with angel investors. So I received an angel investment fund and I met an angel investor through this event'.*

Although reliance on the business ties for financial resources was not the main motivation, for some participants, using these business ties to obtain the start-up funds required was the first avenue of exploration for others. For example, some participants commented: *'Actually, I depend on competitions and grants because it was the only option I had at that time' (F1).*

*'The main problem in starting the business was finding funds, we needed money to start ... so, we went to [organisation X] but we did not get anything ... then we applied to [accelerator Y], where we were one of the five firms that got accepted for investment' (F11).*

*'Before I went to [accelerator X], I had no money. Ok, my husband would support me with one, two hundred, but for how long? So, I was looking for financial resources and I went to them' (F12).*

### **8.2.1.2 Legitimacy and business idea validation**

Legitimacy and business idea validation was another content obtained by participants through their network ties, where the business network was the main source of validation available to these female entrepreneurs. As the firms at the earlier stage face

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the challenges of being an unknown quantity in the market, new technology-based firms need to obtain the endorsement of the industry players about their quality (Stuart et al., 1999). Therefore, ‘in order to enhance their visibility and gain recognition, new ventures seek to obtain a prestigious business affiliate to build up a strong link with and eventually hope that, through this key contact, they will have access to new customers and partners’ (Elfring and Hulsink 2003, p. 413).

The data showed that most participants relied on business ties at the outset to obtain recognition and add reliability to their ideas and business start-up. F13 noted:

*‘For example, [X], she is an American blogger ... she wrote about our applications, there is other group who are interested in the tech entrepreneurs, they were very interested in our firm as they know my publications especially Arab technology pioneers ... they actually caused a big promotion and all of them came through my posts on Twitter’.*

Table 8.1 provides some other examples of using some business ties to acquire legitimacy.

**Table 8.1: Illustrative examples of the legitimacy benefits of the business ties**

Type of tie	Quotation
<b>Business owners, then become investors</b>	<i>‘[X] and [Y], they are behind the biggest technology exits in the region ... I’m privilege because they actually can shared some of their experiences with me’ (F3).</i>
<b>Business support organisations</b>	<i>‘This incubator was under the umbrella of the [X] and [W] and these are very well respected in Jordan. So even the people who did business with us, when they wanted to come to our office they go through that security and they feel that they are in a credible place. So this adds credibility to the start-up, who is starting in that, and this is support’ (F4).</i>
<b>Firms in the industry</b>	<i>‘As a start-up exposure is the most important thing more than money ... as a start-up you should know your players and you should know your position, there are very big players in the field ... So, connecting my name with the company like [X] is something very important, it’s worth more than money for me’; ‘[Y] they asked for help and in turn invites me to different events, when they came to Jordan, they invited me, ... it’s a good relationship and I think links your name with big companies in the industry is something very good’ (F5).</i>
<b>Mentors</b>	<i>‘I think the credibility and PR is very important, when these big guys know about my business, they will probably mention it, I have many people who’ve said, yes, we heard about your company from X, Y, Z, ... so, this helps us in building the image of the company’ (F9).</i>

Some female participants obtained legitimacy as a new business through participating in entrepreneurship competitions and events that were run through some enterprise organisations or firms within the industry. Actually, two of the independent participants who were not involved any business incubators or accelerators, obtained such legitimacy through these competitions. A comment from F2 reflected this:

*'We got famous! Everyone got to know our work, our style ... even, [X], the founder of [firm Y], he always says, like, who are you? You got famous and everyone was talking about us, because wherever we went, we were winners and many people and organisations invited us to events and conferences'.*

On the other hand, some female entrepreneurs relied on the business ties to gain legitimacy from other players within the markets. This occurs as the new firms have limited capability in searching and finding potential ties within the market (Hite and Hesterly 2001). F10's comment reflected this:

*'Mentors hooked me up with someone can help me ... new people, um, they work in and own big companies, as they know exactly who can help me out in this or that specific matter'.*

### **8.2.1.3 Human capital**

Human capital was demonstrated within the data as one of the main contents that the female entrepreneurs obtained through their start-up's network ties. The cross-case analysis showed that that the business network ties were also the main sources of the participants' human capital. Human capital is defined as 'being embodied in the skills and knowledge acquired by an individual, which is created by changes in persons that bring about skills and capabilities that make them able to act in new way' (Coleman, 1988, p. 100). The data suggested that different kinds of skills and knowledge were sought by these female entrepreneurs from their business ties.

Building skills was one form of human capital that these female entrepreneurs obtained through their network ties. The cross-case analysis demonstrated that the business ties facilitated the enhancement of their human capital through acquiring new skills. The most common skills that appeared through the data were the soft skills, including

building skills in finance, accounting, market-research, and future investment. F3's comment reflected this: *'They [accelerator X] taught us about financials, business planning, accounting, marketing, about the market itself'*.

These soft skills were commonly acquired through participating in different training programmes, most of which were arranged through different business organisations. The data also showed that even the independent female entrepreneurs were searching for help from different business organisations to obtain these soft skills. For example:

*'Six months ago, I felt that in the part of, or on the side of creativity I'm doing very well, but businesswise wise, no, I do not have this skills or structure to my business ... so, I went to [accelerator X] boot camp and I learned everything, honestly, in terms of business model, how you can focus on your target audience and all these thing related with sales forecast and so on ... I attended this boot camp and I stopped, I don't want investment' (F2).*

Thus, the soft skills were the main skills that appeared across cases and were mostly obtained from the ties that they built with different business organisations, which then helped to increase the human capital of these female entrepreneurs. Three forms of **knowledge**, on the other hand, demonstrated through the cross-case analysis, were obtained mainly from the business ties and also helped to increase the human capital of the entrepreneurs. These forms of knowledge included: business and product/service development advice, business information and learning from others.

#### *Acquisition of business and product/service development advice*

The cross-case analysis showed different kinds of advice received from the business ties, which came in the form of: business-related advice and product/service development advice. The data indicated that business-related advice included receiving different counsel, tips and guides about different business issues. These issues included: market research, finance, human resources management, business planning and dealing with business situations and challenges. For example, F2's comment about the other entrepreneur's advice reflected this:

*‘Actually when we started, we put a plan that in the worst case, first six months, we will not get a penny and we were fine with this and we kept some savings before quitting the old job from our salaries, that’s to survive for six months, to build a name and not to think of finance ... many people told us this ... we got this advice from all people who started a business; they said if you want to start, you should not think about money’.*

Table 8.2 illustrates some other examples of the business-related advice.

**Table 8.2: Illustrative examples of the business-related advice acquired**

Network content	Type of tie	Quotation
Business-related advice	<b>Business organisations</b>	<i>‘I used to ask [X organisation] regarding the business plan and the manager of the incubator’ (F1).</i>
	<b>Other entrepreneurs</b>	<i>‘[X] and [Y] actually gave me advice about fund raising ... [Y], also, more about freelancers, like, how to deal with them rather than to find them, its HR advice’ (F10).</i>  <i>‘There are some start-ups, we already have business with, so, it also useful, I mean the relationship between the entrepreneurs is not just informal and it’s like advice, some companies ...’ (F9).</i>
	<b>Business partners</b>	<i>‘They [X and Y] actually followed up and they asked if I needed help ... they gave advice ... mainly about how to run a business ... like, keep on hiring smart people, hire people who are smarter than you, you have to move fast, they believe in bootstrapping versus burning cash, which is how to do more with less and even if you have just a little bit of investment how to actually maximize it and do more, just, advice from their personal experiences’ (F3).</i>
	<b>CEOs</b>	<i>‘Advice about the business, like, in marketing, um, strategy, because he is heading a company that supports start-ups’ (F3).</i>  <i>‘For example, [X], she is the CEO of [firmY] ... we talked to her couple of times about e-commerce and stuff like that, just advice like how to promote our content, the benefits of ecommerce’ (F6a).</i>  <i>‘So, when we went out with [X] and we were really tired and depressing, he is a person who you can trust, he is from our community ... we sat with him and he advised us about many things, about how we should start thinking about our business ... he told us: do a character representing your company! ... he told us, think about TV channels! ... so, he opened our eyes’ (F2).</i>
	<b>Internal employees</b>	<i>‘Asking for the marketing person, she is always with me since I started, she is always advising me’ (F5).</i>
	<b>Business owners</b>	<i>‘I spoke few times in Dubai with [X] about just in general, you know, what is to take to make a company appealing for investors, and he said, well I would invest in a new company if there’re A,B,C’ (F6b).</i>
	<b>Accelerators</b>	<i>‘I consulted [X company] ... about contracts, bonuses, taxes and so on’ (F6a).</i>



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**Table (8.2): (continued): Illustrative examples of the business-related advice acquired**

	<b>Service firms</b>	<i>'Since we have stated, we have a contract with lawyer to check all our contracts and all our business dealings and all things we sign it has to go through him first ... we have a taxation consultant who checks that all the taxes are paid on time and all of these details' (F7).</i>
	<b>Mentors</b>	<p><i>'Everything, marketing, business plan, for example, this mentor from Mowgli, he helped us in many things not just advice and he was introducing us to many people in his network ... we were talking with him about details and he was following us actually' (F11).</i></p> <p><i>'They were studying with me the cases, they are consultants originally ... like advice in sales' (F14).</i></p> <p><i>'The time and advice that those people give you was amazing, because they prevent you from making mistakes they have made actually your journey road shorter' (F3).</i></p> <p><i>'He put a very good business case in my mind' (F5).</i></p>
	<b>Professionals</b>	<p><i>'She has a business, she has an online blog, and, so, she understood my business nature. This is why I selected her, she is good in marketing, she gave me advice on my Facebook page, like 'you have to do this, or do that and like these things'. So, her advice was very good for me' (F12).</i></p> <p><i>'Consultations, but these consultations were very helpful in how academics look at things and what are their considerations, points of view, or perspectives ... for example, when I went to the education embassy, I phoned [consultant] before I went, she told me to tell them ... she helped me know how to deal with them' (F13).</i></p>

The analysis revealed that business ties were also the main source for the product/service development advice. This advice included issues related to: business ideas, business development and technology-related issues. For example, a comment from F13 about her freelancer reflected this:

*'She is an artist, so, when we finished the idea and developed it, we called her to have a look with me, so, she starts giving feedback, so we do, like, polish together...'*

Table 8.3 illustrates some other examples of the product/service development advice.

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**Table 8.3: Illustrative examples of the product/service development advice acquired**

Network content	Type of tie	Quotations
	<b>Mentors</b>	<p><i>'[X] has provided a lot of good useful insights and advice in business development' (F9).</i></p> <p><i>'He is my mentor now and I started to talk about my business ... he said one don't take projects now ... he said if you take one project now, you will loss a month from organizing your job ... and start to work on organizing your business ... so, he said a very good advice for me' (F5).</i></p> <p><i>'He worked with us as a mentor, if I need something in the web, IT, he was always ready to help' (F12).</i></p>
	<b>Business partnerships</b>	<p><i>'I dealt with them for developing that project ... actually, they were the once who gave me this good consultancy' (F7).</i></p> <p><i>'More content development and Apps and how to develop Apps and animations, so, it's more content related, they're our partners. Those two CEOs were our partners and up until now, so, one of them helped me in the business development and the other helped me in the animation and Apps, both of them own the same company' (F6a).</i></p>
	<b>Consultants</b>	<p><i>'We had a consultants and I brainstorm the idea with the consultant for some time. So we developed a business plan that we can use and this is how we develop the idea' (F4).</i></p>
	<b>Accelerators</b>	<p><i>'In [X company] and along the way we spoke to a lot of people who basically really helped to crystallis our idea. And there are many of them ... every person that we spoke with would look at the business plan, look at the financial and say wait a minute there is something wrong ... I think, very important for us, to really develop it properly before we went for funding' (F6b).</i></p>
	<b>CEOs</b>	<p><i>'They told us for example, how to build a portfolio to our company, how to do the first production ... which is what we did ... then circulate it through the social media to tell others that we started our business. So, we did that' (F2).</i></p> <p><i>'In the ICT field, there is my brother's acquaintance, he is a CEO, I used to contact him to ask for advice, consultancy, specifically he is in the ICT sector' (F11).</i></p> <p><i>'With [manager] I discuss issues related with management and business development ..., I discuss lots of things with her, when I have to make very hard decisions' (F11).</i></p>
	<b>Professionals</b>	<p><i>'He is a web developer; he gave me advice about the web content' (F10).</i></p> <p><i>'Some bloggers helped us as they wrote about our products, other than this, like questions and answers, I would ask and anyone may answer, for example, I used to ask about a specific theme or artist or I am confused about something, so, they would help and sometimes they would connect me with others that could help' (F13).</i></p>
	<b>Other entrepreneurs</b>	<p><i>'Whatever is in technology, I can go and ask him' (F2).</i></p>

***Acquisition of business information***

The analysis across cases indicated that the participants increased their knowledge by receiving different kinds of information through their network, specifically the business ties. The types of information were varied, and included information about the industry and new sources of resources, information about entrepreneurship and networking events as well as information for learning about human resources.

Information about the industry included information about the market trends and figures. For example: a comment from F3 explained:

*'In twitter I used to ask so many questions and two people I remember very well were kind enough to send me reports. One of them ... he is the founder and the manager of research group ... the other person he a manager works with the VC fund, so he does access to a lot of information and reports about the industry'.*

The information about new sources of resources was the other type of information that appeared within the data and came from business ties. For example: *'They [organisation X] contact [accelerator Z], and then they told us about this programme' (F10)*. (Table 8.4 provides other examples about these types of information). The other type of information that some female entrepreneurs obtained from business ties was information about entrepreneurship and networking events. For example, *F1 commented on her tie with a manager as: 'He told me about this competition'*. Similarly, *F2 commented on her tie with an entrepreneur as: 'Whenever there are seminars or conferences, any tech events he always texts me'*. In addition, a few ties were built particularly with some organisations that run regular events and competitions that were a source of information about different events. These ties helped to provide regular information about events within the technology sector. For example: *'I heard about [award X] through [organisation Y], they told us about this award and I participated' (F14); 'but the thing that they [accelerator X] sent emails about events happening or things happening ... so if it important to my business I would go' (F9)*.

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Some female entrepreneurs indicated that these organisations were their main source of information about events, given that many event organisers within the industry contact these organisations to promote their events. A comment from F1 reflected this:

*'They make like networking sessions for entrepreneurs and businessmen, they invite many businessman in Jordan and young entrepreneurs, just, exchange business card and talk about each other experiences ... and I think that [organisation X], a lot of people contact them, you know, to give offers for entrepreneurs ... so, I used to receive emails for a lot of events in Jordan, I would never get to know about these events if I don't have that connection with [X] centre'.*

**Table 8.4: Illustrative examples of the information acquired**

Network content	Type of tie	Quotation
Industry and new sources of resource information	<b>CEOs and managers</b>	<i>'During the training course which was quite an intensive six day training course all aspects related to start-ups and particularly tech start-ups ... the entrepreneurs started to modify their business model according to the information that they got during this training course' (F9).</i>  <i>'The manager of the incubator, he told and encouraged us to apply for the grant and helped us to make the presentation and the communications and all these stuff' (F1).</i>
	<b>Government organisations</b>	<i>'For the analysis we got so much information from the [ministry X], because we needed to know like statistics for ... ' (F4).</i>
	<b>Mentors</b>	<i>'We talked to mentors who are in the field of IT and digital business' (F6a).</i>  <i>'If I wanted a certain study, for example, I used to ask a certain mentor who knows about this subject or market segment. So, and they usually have studies that they can give' (F10).</i>
	<b>Freelancers</b>	<i>'Through his talk I found business, he was working in companies, so, he starts to tell me what his managers did, especially he worked in a Saudi university and in India. So, he starts, like, by the way the Saudi's, they weren't doing this, or they were doing that or using this, do you know what I mean...' (F12).</i>
	<b>Other entrepreneurs</b>	<i>'We helped each other, if anyone needed any thought or anything, like, if I need a programmer, it's like, oh, yeah, I know one very good and this is his phone number' (F10).</i>
	<b>Business organisations</b>	<i>'When I went to [organisation X], I heard that there is [business incubator Y], so I went, they told me about [organisation Y] and I went to them ... ' (F14).</i>

In the end, although different type of business ties were a source of information, the analysis of most cases showed the business support organisations and other entrepreneurs were the main actors in providing these types of information.

**Table 8.5: Illustrative examples of learning about human resources**

Network content	Type of tie	Quotations
<b>Learning about human resources</b>	<b>Previous work colleagues</b>	<p><i>'Through our previous freelancers, I asked a lot through our freelancers that I know or through my friends that work in these areas, that do you know who does this, does that and they sent some portfolios' (F10).</i></p> <p><i>'Those girls always connect me with freelancers like studios and script writer' (F2).</i></p> <p><i>'Well at the beginning, the people that I knew, I used to ask people I knew in order to appoint people' (F4).</i></p> <p><i>'Sometime the connections helped, for example, for the editor, I called a friend I used to work with and I asked if he knows anybody' (F6a).</i></p> <p><i>'For example, I used to phone them if I need a freelancer or employee, like, guys do you know anyone looking for work?' (F14).</i></p> <p><i>'My friend ... I still call her for help with linguistic problems ... so, she helped' (F11).</i></p>
	<b>Old bosses</b>	<p><i>'My old boss used to send me CVs of people who he thinks they are qualified to be hired in my business and actually I hired two of them' (F3).</i></p>
	<b>Friends</b>	<p><i>'I knew a friend who was Chinese, so, she helped me to learn about Chinese narrators in China, same in Spain' (F4).</i></p>
	<b>Husband</b>	<p><i>'The first web developer I dealt with was through my husband. Now, I'm renting an office in his company. There are many offices and some are rented to start-ups, so, I've got to know them, one of them has helped me with my web site' (F12).</i></p>
	<b>Father</b>	<p><i>'For the taxation guy I used the same person that my dad use for his business, ok, that's for the taxation. For the lawyers, as well I ask my father to recommend somebody and this is how I got him' (F7).</i></p>

The analysis, on the other hand, revealed that personal ties particularly with previous work colleagues were a source of information to **learn about human resources**. Using the personal ties, particularly the previous work colleagues, to learn about employees

was seen as more trustworthy by some female entrepreneurs. A comment from F14 reflected this (Table 8.5 provides more examples):

*'Sometimes I want a freelancer and I want someone very good not just anyone, you know, you want to have high quality work, so you need a trusted person ... so, I used to ask the guys that I used to work with'.*

### ***Learning from others***

A common theme emerged across the cases about the forms of learning acquired by these female entrepreneurs through their dealing with different business ties, including: learning from other's experience and teaching.

Learning from other's experience included learning new strategies, finding solutions, learning through sharing ideas and information with other actors. The data showed that the other entrepreneurs and business owners from the business ties, were the main sources for the participants to learn from their experiences. For example (Table 8.6 for other examples):

*'Most of those that are working, have a business or have investments told us if you have some money to start don't go for investment ... [X] the founder of [firm Y] he told my business partner literally 'if you are able to stand on your own feet, don't go for investment' (F13),*

Learning through teaching also helped some participants to build their knowledge, which included learning new things through being involved in a discussion or experience with other actors. F14's experience with an organisation reflected this:

*'There is [X] a consultant service, they give support, they do a business plan and it is more focused on the market research, I did market research before, but I wanted someone to do it in a professional way and I wanted someone to do a survey ... so, they did a survey and I followed with them, then we developed a business plan, so, from them I learned how to develop a business plan in a professional way'.*

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Table 8.6: Illustrative examples of the types of learning from others

Network content	Type of tie	Quotations
Learning from other's experience	Organisations	<i>'I took a lot of training sessions in entrepreneurship through [X] center and they mentioned outsourcing idea and I found it really very interesting' (F1).</i>
	Other entrepreneurs	<i>'It was good to see, like, yes, you're facing the same problem, yes, it's normal this is what supposed to happen, she did that with the investors and he did that with the freelancer' (F10). 'Honestly I tried more than one thing, for example, when I started I tried to hear from people or start-ups who were already entered in partnership and investment and I saw their struggles and how they feel' (F2). 'I strongly believe in the concept of entrepreneurs supporting entrepreneurs, so, we were meeting up a lot, up until you know, we share experiences and talk ... because sometimes by listening to what other people did and what worked for other companies you might start change a little bit in the strategy of your own company' (F3). 'If they had investment or if they didn't have investment, how did they get it' (F8). 'I discovered that I'm not the only person in terms of the challenges faced, everyone has something ... so, we talk, when they start to talk about their problems, I used to tell them, like, Oh, I thought your business is good' (F12).</i>
	Business partners	<i>'[X] and his company, my business partner, I got to learn from his own mistakes and his own experience' (F8).</i>
	Professionals	<i>'I asked them about their experience and I love to talk about myself and I don't like to keep the ideas in my mind, because sometimes you feel that those ideas that in your mind are amazing ideas, but when you come to speak about those ideas you feel them to be nothing' (F2).</i>
	CEOs and managers	<i>'It depends, there is the CEO of [organisation] and a manager of [company], I talk to them about details and share with them the cases that I face' (F11).</i>
	Business owners	<i>'The thing is that those people that they started their business and now they are doing very well and they became a successful business owner, they become very enthusiastic when they see start-ups, so, he gave me his style and how he started, he told me what he did, he talked about himself' (F2).</i>
	Teaching	Mentors
Business organisation		<i>'They told me what the meaning of business incubator was, I didn't know actually, you know, I started lost and I wanted to open a business, but I didn't know how' (F14).</i>
Other entrepreneurs and business owner		<i>'They helped me in their experiences, they helped me in answering my questions, there were persons helped me in two ways, either give me advice or embarrasses me through their questions, such as what did you do, what you are doing now' (F2). 'Every time we end up talking, we, um, it is like thinking outside the box or having someone else to think with' (F3).</i>
CEOs		<i>'Also I talk with them about what I'm doing and they start to ask me like OK what is next, what is your target, who is your target, what is your market and like these questions' (F2).</i>

Some participants indicated a devil's advocate approach as another form of teaching through debating an issue with a specific actor. The advantages learned from this discussion process were described in a comment from F4, about managers and other entrepreneurs in her network:

*'The manager of the incubator and there were two, like after each other, they really helped because they can play, like, the devil's advocate, saying what if, what so, no, no this is not good. And there were the colleagues around the incubator. I used to run things by them and see whether this is appealing, take their opinion and that stuff'.*

Table 8.6 provides other examples of the learning forms that came from business ties.

#### **8.2.1.4 Moral support**

Moral support was most common content that arose from the personal ties and included: emotional support and an extra pair of hands. The **emotional support**, which comes in the form of psychological support; satisfaction and pride in their entrepreneurial achievements and their confidence that there are some people backing up them during the business journey. Table 8.7 provides some examples of the emotional support.

Most female entrepreneurs, founders of ten firms, emphasised the importance of this support at the start-up stage, where some others, founders of four firms, indicated that this support increased more after proving their business idea. For example, F3's comment reflected this:

*'At the beginning they did not think it's a good idea, I had a good job and they thought that it's better for me if I stayed in my job, secure job, salary, social security. So, at the beginning they wanted me to stay in my job. But after I took the step and I started, they have become supportive, very supportive' and she added 'After I started and after I launched my website and got investment, they believed in it more and they have become definitely more supportive'.*

Other female entrepreneurs confirm this also, as F8 explained:

*'They've changed, they support me now more, it is different, because I proved it that it's a good thing and so on, but for them it was a new thing at first, for*



*their daughter to start her own company, they were looking for a secured job, you know, and it's the same story with females and males and everyone in this part of the world'.*

Similarly, F1 stated:

*'I think now my mum and dad, they trust me more. I mean, they trust my decisions more. So, they start to say like if this is your choice, we're gonna support you, like this'.*

F11, also, mentioned:

*'It has changed, but honestly they still have this fear of failure, they are afraid of failure'. Thus, emotional support especially from families was a continual support along their business journey.*

**Table 8.7: Illustrative examples of the emotional support**

Network content	Type of tie	Quotations
<b>Emotional support</b>	<b>Parents</b>	<i>'When I see the happiness in their faces and their eyes if I got success and their feeling of pride that, you know, our daughter did this and our daughter did that, this give me a hug support actually, that is enough, to me that is enough' (F1).</i>
	<b>Family and friends</b>	<p><i>'For example, from my family, my parents support me a lot especially my father, some of my friends actually support me, [X] and [W], they were really very supportive when I started, they gave me this feeling that I'm doing great thing and they really proud of me and you know how friends do' (F2).</i></p> <p><i>'Emotionally, you can't work without somebody backing you up emotionally, and they give me a lot of emotional support' (F7).</i></p> <p><i>'Moral support, I mean, more emotional support, not financial or technical support, its more emotional support, which gives you positivity, which gives you more energy to do whatever you're doing' (F9).</i></p> <p><i>'My friends and family they have been important and supportive of course, they have more a normal support but not in business depth. Like my husband and my father they're really big support, but they don't actually add value to the business itself' (F10).</i></p> <p><i>'They listen to me only ... honestly, their support was more emotional support ... like, my mum is always asking, 'yeah what happened, work hard', you know mums, my husband when I started also supported me' (F13).</i></p> <p><i>'Sometimes you need emotional support, because you pass through difficult situations in your business, or you don't know how to make decisions, so they support you emotionally and encourage you, we are human at the end, you know start-ups, you find many problems' (F14).</i></p>

**Table 8.7: (continued): Illustrative examples of the emotional support**

	<b>Mother</b>	<i>'My mum, my sister, they support, our relatives, you know, they are proud of us' (F11).</i>
	<b>Husband</b>	<i>'He was listening to me, my sister and husband, when I started and even before I went to [accelerator], they were listening to me, when you start a business you need someone you can trust and you can talk to or you are disappointed, so they can back you up, give you positivity, energy and emotional support' (F12).</i>
	<b>Previous work colleagues</b>	<i>'Within the community, firstly my partner, my ex business partner, he was big, big support, people around us such as ex colleagues from ex work, they were really excited our start-up and when we started, I remember [X] and [Y], [R], [F] and actually they were many people who supported us at the beginning from my former work when we started our business. I can't define names as much as the atmosphere of supporting entrepreneurs around me was big help for me' (F2).</i>  <i>'A lot of those people helped me indirectly, support like encouragement' (F3).</i>

**Table 8.8: Illustrative examples of the personal ties' extra pairs of hand**

<b>Network content</b>	<b>Type of tie</b>	<b>Quotations</b>
<b>Extra pairs of hands</b>	<b>Sisters</b>	<i>'She [her sister] was helping to do the documentation for the competitions' and 'I used to do like user testing to let my sister, brothers and relatives use the device and ask for their suggestions' (F1).</i>  <i>'During the university breaks, my youngest sisters ... for example, I taught them how to do some simple things, I was paying them by the hour'; 'My family, they support ... sometimes my sisters or brother lend me money, just to get work done'' (F14).</i>  <i>'My sister, when we started, we were looking for employees, she sent a post on her LinkedIn account' (F13).</i>
	<b>Mother</b>	<i>'She gives me time more than anything and even emotional support and she takes care of my daughter when I need to work for long hours' (F3).</i>
	<b>Father</b>	<i>'My father ... he used to helped me ... which was very rare but sometimes if I need him to come to the company and check on the work and employees or something, if I'm travelling he would do that' (F10).</i>
	<b>Husband</b>	<i>'My husband, for example, helps, when I go out or travel' (F13).</i>
	<b>Friends</b>	<i>'My friend ... I still call her for help with the linguistic problems ... so, she helped' (F11).</i>  <i>'I asked my friends to give me a hand ... I told them about this idea and they said OK we can share with you if you want help' (F1).</i>  <i>'I phoned my friends from university days ... I asked them for help ... we split the work between us and we finished at the time and we got very, very good money' (F5).</i>

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The analysis also revealed that the **'extra pairs of hands'** was the second most common form of moral support, which mainly came from personal ties particularly from family and friends. Extra pairs of hands appeared within the data in different forms, such as, doing tests or experiments on the products; taking care of children and help in doing routine tasks. Some further examples are presented in Table 8.8.

Although the moral support was the main and most commonly agreed benefit among the participants, the data showed that in some cases some personal ties provided other types of support. From family, this included: technical support appeared in one case, namely F1, she stated: *'He [brother] is the one who helped me, he with a company ... so, he helped me to make the last stage of prototyping'*. Among the other benefits from family members was entrepreneurial support, as appeared in one case, namely F2, as she stated:

*'The thing that help us that my father gave us this flat, so, I didn't have to pay anything no rent, electricity, internet, we didn't pay him anything, because this place is already a part from his company and empty, so, he already pays everything. This thing helped us too much, we weren't thinking about issues related with rent, electricity or internet or anything like this'*.

In this case it appeared that her father also played another role in providing some business advice, she commented:

*'I always come back to someone who has huge experience and I trust his opinion very well which is my dad ... he helped me a lot with different issues, the legal ones and you know this stuff is really hard and you can't do it alone, he helped me when I registered my company, with the legal issues, the proposals and how to deal with the clients' (F2).*

Although this female entrepreneur received different benefits from her father, achieving development particularly in her industry pushed her to use business ties to obtain their knowledge. Her comment reflected this:

*'For example, when I go to talk with my dad, he looks at me emotionally like my sweetheart, you are doing great ... I like to get out of my comfort zone! This comfort zone is my friends and my family ... so, I prefer to go to the*

*competitions environment, I go to my community to see what is happening'* (F2).

On the other hand, the analysis of F6's case showed that there were different family members who were utilised as a source of advice and help. F6b commented on her husband's help:

*'I have to say my husband helped [X] and I a lot, because he is a finance person and I'm not good in numbers, so, he would sit with us'.*

F6a, also commented on her husband's support:

*'We took this flat from my husband, but during the first five years we did not pay him rent, but now we paid him when we reached a positive position'.*

Also she commented on her brother's support:

*'The lawyer ... my brother and [X]'s brother has a company ... but they were working with thirty other lawyers, um, but the thing is that we told them that we are a start-up and we haven't big budget, so, they helped with the retainer agreement'.*

Although a number of the family members appeared to provide different support and help, it appeared to be the case that many business ties were important in providing practical knowledge content. Comment from F6a which explained this: *'Our mentors were our husbands and they weren't proper mentors because their businesses fields are different- not in technology'.*

Ultimately, and despite that, the data showed that some other benefits appeared in some cases. The cross-case analysis revealed an important similarity among all participants that the emotional support and the extra pairs of hands were mainly obtained from the personal ties. For example: *'They [family] feel happy if I succeed, of course, but, let's say, financial support, no' (F1); 'They gave me whatever support I need but not in the business' (F10); 'My former work friends helped in that they were telling me about some employees and emotional support, no more ... Their input was not very strong, honestly' (F11); 'Not really, they [friends], um, emotionally maybe'*

(F1); *'Not for work, my relationship with them is very superficial ... I have many friends but nobody helped me in my business, we sometime have a chat, just chat'* (F6a); *'No one from my previous knowledge, not even emotional'* (F12).

### **8.2.2 The content of the structural dimensions of the start-up**

The structural development model of these entrepreneurial networks, Figure 7.3, indicated that their start-up network structure was characterised by: a low level of network diversity including a small circle of business ties along with the presence of some personal ties; working within a male-dominated network; including new strong ties midway in the start-up; involving well-developed interconnectedness within the group and benefitting from few indirect ties and limited entry into the network. Based upon analysis of the cases and the above discussion, the content of the network structural characteristics in the start-up business, is presented in the next sections.

#### **8.2.2.1 Content of the network in terms of diversity**

Based upon the case analyses and the above discussion with regard to the content of the start-up ties, analysis indicated that although the diversity of the participants' start-up network is characterised by its low extent, it included a limited number of ties under the business ties and limited extent of personal ties; the content of these ties varied. This content included: human capital (knowledge and skills), financial resources, legitimacy, emotional support and extra pairs of hands. F9 summarised her start-up network as:

*'Everybody around me helped me in one way or another, whether my immediate family through their support and encouragement, [accelerator X] community, the people inside [accelerator X], mentors, other start-ups and entrepreneurs'.*

The start-up, male-dominated network provided the participants with different forms of knowledge. Although this type of network reduced the start-up network diversity, the cross-case analysis showed that these network ties were a source of building knowledge. In explaining this, the majority of the mentors, managers, CEOs, business

partners and professionals that formed the business ties and appeared to be important for providing advice, information and teaching, were dominated by men.

Doing further analysis to understand the content according to gender, the content of the female ties that appeared within the participants' start-up network was varied. In fact, those ties with other female were few within network and the benefits that they provided were spread between sharing information, learning about human resources, information about event, emotional support and extra pairs of hands; however, they did not cluster into a common theme. The data, therefore, support the assertion that the most common content was provided by the male-dominated network in the form of the human capital- mainly knowledge (advice, information and learning).

#### **8.2.2.2 The reachability content of the network**

The research analysis demonstrated that the few direct business ties built at the outset then facilitated reaching actors who helped to equip these female entrepreneurs with knowledge. Theorists found that if the entrepreneur has limited early direct entry to a range of diverse actors, these actors can be accessed through brokers (Burt, 2005). Thus, this small circle of business ties was an early source for these female entrepreneurs to obtain and reach different actors.

Although the extent of reachability through different indirect ties was limited, the common theme which emerged through the analysis of those start-up indirect ties indicated that they were a source of building knowledge. F9 summarised:

*'But I've through the mentorship programme that they have, I mean, I went and I met many other entrepreneurs and mentors who have been there, done that, who basically give advice'.*

Further analysis of the cases revealed:

1) For those independent female entrepreneurs, the few indirect ties appeared to be the source of the required knowledge including business-related and product/service related advice. A comment from F8 reflected this:

*'When we started, [her business partner] and [business owner] ... I asked them for business advice, yes, they helped me out, yeah, I mean basically they're partners with my partner in the third company, so, they were through my business partner'.*

2) For the incubatee participants, the direct ties, mainly mentors, managers, professionals and other entrepreneurs, whom they reached mainly through business organisations and accelerators were a source of advice, information and learning. F3's comment explained this:

*'[accelerator X] had introduced us to a law firm when we started, they called [Z] ... they've been kind enough to give legal advice and we were working with them based on minimum, very minimum fees. Same thing with taxation and auditing advice, it was a company called [Y], they've done the same thing as well'.*

Similarly, F10 stated:

*'They [accelerator Z] also connected us with people who make some courses for financial ... this organisation gave us two courses ... to help you to read your financial and see how to manage cash flows and what is cash flow and how to deal with it and what do these numbers mean and everything related, they were very beneficial courses'.*

The business support organisations that run events, competitions and training sessions regularly, in what appear to be industry-clustered events, appeared to provide an opportunity to meet with actors who could provide knowledge at this stage, particularly from mentors and other entrepreneurs. A comment from F3 summarised this:

*'They were very informative, they had a lot of informative sessions. [organisation X] events are very, or, they do offer a lot of one on one mentor sessions ... they host speakers, some of them are established entrepreneurs and some of them are just start-ups, because it's very important for entrepreneurs also share their experiences with the other entrepreneurs'.*

Both incubatee and independent entrepreneurs were utilising these events to access people who could provide different kinds of advice and information. From those participants who had just moved into the early-growth stage, F9 summarised:

*'I have been two years in this business, I've learned so much and I've developed as a person so much in this sector, but most of my knowledge came either through attending secessions ... buying books that related with tech star-ups and meeting with these people'.*

F2, also, added:

*'Experience, hear other people stories, solutions to my problems, when I started to go to these seminars, I started to hear answers of all those questions that I had in my mind through a person who stands up in the front of me and he is talking about what happened with him, how he started, what his struggles were and how he dealt with those. So, through this discussions, seminars I started to hear answers of my questions and I was like oh, oh, this is the thing that I need, really, exactly was like this'.*

Thus, this research suggests that knowledge was the main content at the start-up from the few indirect ties.

### **8.2.2.3 The content of the strength of ties**

The strength of ties continuum, Figure 7.2, within the female entrepreneurs' networks, indicated that their start-up network structure was characterised by including new strong and midway ties. Based upon the analysis of the cases and the above discussion with regards to the content of the start-up ties, the strong ties, dominated by newly built business ties, were the main source of knowledge as well as legitimacy and financial resources. These ties were particularly utilised to obtain advice, information and learning. The informants emphasised the benefit of building small groups of business ties at the start-up stage, which appeared to be the main source of building the high quality knowledge they needed. The following comment by F6a reflected this:

*'I've built connections with people that I can trust, I've built a network of people that I can go back over and over again, if I have many, many different mentors, for example, they will not build history about my work and they will know nothing about our business, but if I work with group for one or two years, they will start to know our business trend and like, yeah, this company work this and this and because they have this history about our business they will give us the right advice, but if I want to go to ten people and each one give me different advice they will loss me'.*



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Interestingly, the data showed that the content of some personal ties, which mapped as strong ties on the continuum, was also building knowledge. These personal ties, which were classified as strong ties, mainly provided business-related advice. A comment made by F6b reflected this:

*'I spoke to my, you know, at the beginning when we're talking about the set of sales schemes and how to incentivise sales people, I spoke to my brother who is in, um, who has, like, a factory'.*

On the other hand, the analysis indicated that the midway ties that were dominated by personal ties, were mainly a source of emotional support, an extra pair of hands and learning about human resources. However, the data showed that the business ties, which mapped midway along the strength of ties continuum, were a source of legitimacy as well as financial resources, particularly some of the technology business organisations and established firms within the industry.

This suggests that the business ties utilised to obtain legitimacy and financial resources, were ranged between midway and strong ties. As a result, this research suggests that the most common theme that emerged through the analysis of the content of the start-up network's strength of ties included: 1) human capital, particularly knowledge is the main content of the business strong ties. And 2) emotional support, an extra pair of hands, learning about human resources; these are the main content of the midway ties. However, legitimacy and financial resources were the main content of the business ties at both levels: strong and midway ties.

### **8.2.2.4 The content of the start-up network's density**

Knowledge was also the main content of the high density that appeared among the members of their business ties as well as the members of their personal network ties. In describing their network ties, informants highlighted the importance of high density among the business ties, particularly in learning from the others' experiences through sharing information and ideas. The following comment made by F2 reflected this:

*'The most beautiful things in our community is that all the CEOs and people always available online and they answer and they talk and they give you their time and if you want anything just call us. Actually, we all follow each other with updates, and the thing is that I like to talk to them about my problems, why? Because we are facing the same problems and challenges, so, you feel good at the end because you hear from the person who is in the front of you that he faced the same difficulties or maybe a lot more than your challenges'.*

Also, F12 commented on her business ties that included mainly other entrepreneurs and freelancers:

*'We all face the same problems, so, we support each other, like you are a start-up and I am a start-up, we all face the same challenges, it's kind of supporting, we learn from each other'.*

Participants indicated the importance of these dense business ties in obtaining advice.

F1 stated:

*'My networks during the period when I started ... it was more like engineers and entrepreneurs were related to technology, so, I used to ask ... people in these areas, those people who have experience related to my experience'.*

Also, F3 commented:

*'This was beneficial because you know who to turn to when you need advice and you know what other companies doing and how fast they are growing, everything out in the open'.*

On the other hand, facilitating learning about human resources was the most common content of the personal ties network, particularly among the previous work colleagues.

A comment from F14 reflected this: *'Sometimes I want a freelancer ... so, I used to ask the guys that I used to work with'.*

The analysis, thus, indicates that while dense business ties facilitated obtaining advice and learning from other experiences through sharing information, the dense personal ties basically facilitated obtaining information about human resources. This research, therefore, supports the contention that human capital (knowledge) was the main

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content of the high density ties among the members of the business and personal groups, particularly previous work colleagues.

Table 8.9 presents the main content of each network structure that was dominant within the start-up networks of the female entrepreneurs. What can be noticed from this table is that acquiring soft skills was one way the participants obtained human capital knowledge: it appears as a pervasive thread throughout the data, and is common content among most start-up network structural dimensions. Overall, the female entrepreneurs' start-up business networks, which are male-dominated with new strong ties, exhibit high within group density and the few indirect ties which can be used to reach out through, were the main source for obtaining the human capital, especially knowledge.

**Table 8.9: The content of the start-up network structural dimensions**

Content of the start-up network structure	Human capital (knowledge & skills)	Financial resources	Legitimacy	Human capital (knowledge)	Emotional support, Extra pairs of hands and Learning about human resources
<i>Diversity</i>					
<b>Business network ties</b>	✓	✓	✓		
<b>Male-dominated network</b>				✓	
<b>Personal ties</b>					✓
<i>Strength of ties</i>					
<b>Strong ties</b>		✓	✓	✓	
<b>Midway ties</b>		✓	✓		✓
<i>Reachability</i>				✓	
<i>Density</i>				✓	

### **8.3 The content of the participants' early-growth network**

#### **8.3.1 The content of the early-growth network ties**

The female entrepreneurs' early-growth network ties, (see Figure 7.3 in the previous chapter), include business markets and networking platforms and events ties. These types of ties functioned in a particular way at this stage of building these entrepreneurs' firms, where building networks was the main content that emerged from their early-growth network. The cross-case analysis revealed that the structural characteristics of the early-growth networks, promoted and facilitated access to customers; potential actors and firms within the industry, as well as increasing the diversity of access and knowledge. Interestingly, the business network ties at the early-growth stage had functioned differently from the start-up stage. The next sections, then, reflect and describe the content of these ties.

##### **8.3.2.1 Building networks to access customers**

The analysis demonstrated that building network ties with customers was one of the main functions of the market network ties. Female entrepreneurs indicated that accessing customers through market ties came in two forms: facilitating access directly to the end customer and through building business collaboration with distributors, mainly to sell and promote their product/service.

Acquiring access directly to the end customers came from several market ties, however. Clients were the main actors playing this role to access other clients. A comment from F8 reflected this:

*'Of course word of mouth is very important ... if some people work with clients and if they were happy with you, then, they will refer you to other people and then other people contact you to do their projects. So, we are getting clients in this way ... [X], he is a new client who basically introduces me to people, new clients'.*

Similarly, F10 stated: *'There are two, almost two clients usually they suggest potential clients'*. F5, from those firms who were just moved into the early-growth stage, also, stated:

*'There is a very big group called [X] group, it's an organisation that I didn't even dream that could reach them, [X] recently I have reached them through one of my customers'.*

Some participants indicated that there was a role for other market ties in reaching customers, including distributors and agencies. For example, F3's comment on her tie with agencies and firms in the industry reflected this: *'Dubai is trying to bridge the gap between us and our market ... there are companies and agencies in Dubai who are trying to play a role in that'*. F11, also, commented on her tie with a firm within the industry as:

*'For example, we deal with the company that provides content to the other airline companies, they deal with all airline companies, so, we started with [company X] and then they connected us with [company Y]'.*

The data also showed that some business collaborations were built with market ties to reach customers. These collaborations were with companies within the industry in order to sell and promote the product/service. The following comment made by F4 reflected this:

*'This is one contract with [X] ... we have another contract with [Y] ... and that was turned around for us at the company, because we were able to take a contract where we can take every tourist who enters to the [X] site this is integrated in the entrance ticket, it's not optional'.*

F13, also, commented on her tie with a firm within the industry as: *'Now, we have like exchange services and collaboration with [firm X], so, whenever they go they talk about us'*. Similarly, F6a commented on her tie with a distributor as:

*'Recently we signed with the distribution company called [X] and they started in the UAE, they, um, they're probably the largest distribution company in the area ... so, they took our own products and we signed with them couple months ago and now because of them we are in Virgin, we're in Spain, we gonna be in GTFs, we gonna be in Qatar, in Kuwait, Oman, Saudi Arabia, Jordan, Lebanon and Cairo'.*

F9, who had just moved into the early-growth stage, described her newly built ties with a firm as:

*'We now have some collaboration on the business level, like our website is now a subdomain under their website, they're promoting our content on their portal, they're helping us bring traffic from the region, they will help us to sell advertising space in our website through them'.*

The cross-case analysis also revealed that acquiring access to customers was one of the other common benefits that came from the business ties during the early-growth stage. Many of the business ties that were developed at the start-up stage played another role namely, providing access to customers, during the early-growth stage. F10 noted her tie with a mentor: *'My main mentor is [X] ... he connects me to, sometimes clients, whatever he can, sometimes clients, sometimes financial advisors'.* F3 described her mentor's role at the early-growth stage as:

*'Still, still, I have a very good relationship with him now ... he introduced me actually to two people in Saudi Arabia, which was very difficult market to get into, so, he introduced me to [company X] and another company'.*

Another examples from F13:

*'Through [author], for example, a month ago, someone asked her about companies doing games and apps in education ... and she gave him our firm's name, so, he phoned us'.*

F11, also, commented on the role of her firm's investor as:

*'He introduced us to many people, to clients, especially he has work in the Emirates, so, he introduced us to people there, so clients, firms, people who invited us to a conference'.*

### **8.3.2.2 Building networks to access potential actors**

The cross-case analysis revealed that promoting and facilitating connections with potential and industry actors who may provide new knowledge, new additional business contacts and offer opportunity to undertake business exchange was mainly reached through networking platforms and events. These potential actors, especially within the industry that the female entrepreneurs met through events, included experts, technology firms and industry investors. F12 commented:

*'A month ago, there is a new cluster through [networking platform X], they did an initiative to all technology companies in education, and they put us in touch with a group of government and private companies to see how we can benefit each other. This was very beneficial because I got to know all the interested parties in technology and education'.*

F10 stated:

*'The events, um, some of the events that, um, they are doing focusing on IT to have mentor events or seminars or any kind of IT events, they actually give you access for a lot of contacts'.*

The networking platforms and events, in addition, provided access to many potential actors, which included either business or market ties. The following comment from F3:

*'Recently there are a lot of events, there is Wamda, Arab Advisors, Arab net, MENA ICT, and a lot of the events as well ... they are very informative; they have a lot of informative sessions, they do offer a lot of one-on-one mentor sessions, you can get connected with potential investors and potential strategic partners'.*

F10, also, stated:

*'Lots of these things happen in events, through special events that companies are doing now like mix and mentor events, where you can see mentors and potential clients and potential people that can help you out. So, you introduce yourself and then you come back with a lot of contacts and later on you can contact them and see whether there is a potential for opportunities, advice, investment or any kind of opportunities'.*

These actors that the female entrepreneurs met through events were potentially active actors in their network. However, not all the actors that they met through events became active in their network. F9, from those firms who had just moved into the early-growth stage, explained:

*'All these networking events, you develop contacts, you develop relationships, I go to, because I know these relationships will pay off in the future, I either benefit immediately from a question I could ask somebody who is an expert in something or you obtain this business card, write to them genuinely, maintain*

*it and whenever, um, or something comes up in the future I go back to them and ask’.*

Some female entrepreneurs indicated how some actors they met through events became active members in their networks to be utilised later on. For example:

*‘This is more related with events, usually, during events we met many people, for example, when we went to Arab Content conference, [CEO] came and he introduced himself ... when he came to Jordan, we met and then he introduced us to investors especially from Lebanon’ (F13).*

*‘I met this person at an event, he is a CEO and he knows a person in Saudi Arabia who wants to do ... I met this person and we arranged everything, we were discussing a deal, we met couple of times to arrange the deal and sign a contract’ (F11).*

F5, from those who were just moving into the early-growth stage, also, stated: *‘Last month I had a call from [manager] who I met in [firm X] event and he told me that he had nominated me to [firm Y] award’.*

The data showed that the female entrepreneurs appreciate the important of entrepreneurship and networking events in accessing potential and industry actors. F8 explained that:

*‘I don’t participate as much as I did ... sometimes I do just to connect with people if I have not been around very much. But always keep telling myself that I need to attend more events, like, Tech Tuesday in Amman is very important and a lot of other events, yeah, they help a lot’.*

Those female entrepreneurs who were just moving into the early-growth stage, also, emphasised the importance of attending events in building networks. For example:

*‘You can go to the all events, activities, networking events, training and all people there, you can go around and you mix and mingle, you get to know them ... I mean, I have to go to industry meetings, I have to go to attend conferences, exhibitions that these people would be and hang round’ (F9).*

*‘Every time I go to seminars or conferences, I got to know many people ... these events like Wamda’s events or Arab net events, or others, but, now, I have started, um, for sure every month I go to one of the events, there is Tech*



*Tuesdays ... this about technology, they invite amazing speakers, sometimes they invite people from Silicon Valley, they introduce us also to CEOs in Jordan, they invite important speakers and they invite all the technology start-ups in Jordan and they tell us --go and get connections' (F2).*

The female entrepreneurs, therefore, were able to diversify their network ties and build connections with business and market ties via participating in networking associations and events. Participation in these associations is an access route for entrepreneurs to develop relationships with different members (Spence et al., 2003). These network contacts that are created through associations such, as industry organisations, clubs and networking events, help entrepreneurs to diversify their network actors (Martinez and Aldrich, 2011). Engaging in these networking associations, thus, is important in building and promoting connections between entrepreneurs and the actors within the sector (Martinez and Aldrich, 2011; Spence et al., 2003).

### **8.3.2.3 Building networks to access the industry firms**

The cross-case analysis showed that another common benefit that came from these business ties at the early-growth stage was facilitating access to firms within the industry. Therefore, the function of these business ties, especially the start-up built ties, were utilised as a source of building network at the early-growth stage. Female entrepreneurs benefited from the business ties at this stage firstly, to acquire access to firms within the industry that may provide market exchange. F3 commented on the benefit that came from her firm investors: '*[investor X] was introduced us to [company Y] and we are now, today, licensing content to [company Y], yes they introduced us to the managing director of [company Y]*'. In another example, F6a commented on her tie with an accelerator:

*'I contacted them [accelerator Z] recently to put me in touch with [firm X] ...also, [firm Y], for example, we try to get them also through [accelerator's Z] network, I'm not saying that we reached them but this is how it happens'.*

Secondly, the introduction through business ties was to firms with whom they built business collaboration later. The following comment from F7 reflected this:

*'[company X] introduced me, because they knew me, they introduced me to two companies that I'm currently working with now. [firm Y], for example ... they were looking for a partner in Jordan, so, they asked [company X] ... so, they recommended me for them and this is how I got to know them'.*

Similarly, F11 commented on her ties with an accelerator:

*'We got to know many start-ups through [accelerator X] and we are working with many of them, either we are promoting our products through them or are involved in other collaborations. We met also through [accelerator X] a group of Arab content suppliers and we did very good deals with them'.*

The cross-case analysis of the early-growth of the network ties: market, networking platforms and business ties, found that building networks to new additional business and market ties was the main content that was acquired through these ties. However, alongside these ties, two participants, namely F4 and F7, appeared to secure some access to additional ties through their previous work colleagues. F4 commented: *'All that I've been talking about, are these relationships, yes' in an indication to her previous work ties'*. Also, F7 stated:

*'I know a person who used to work with me, who has all the connections in this market that we deal with now, I hired him, because people they know him, they trust him, he knows the business, instated of me going to work in a very long cycle, I hired him'.*

### **8.3.2 The content of the structural dimensions of the early-growth network**

The early-growth network structure, as presented in the development process model of the participants' network structure, Figure 7.3, is characterised by: a good level of diversity in network ties including business ties, market ties and ties with networking platforms and events; continuing working within a male-dominated network; a growing share of weak network ties; low network density; benefitting from more indirect entry ties to extend the network and start to broker others. Based upon the analysis of cases and the above discussion, the content of the structural characteristics of the early-growth network are presented in the next sections.

### **8.3.2.1 The content of the early-growth network in terms of diversity**

The facilitation of additional network ties through early-growth network ties enabled the participants to achieve more diversity in their network. This diverse network structure increases the probability of finding actors who have the skills and resources that the entrepreneurs need (Martinez and Aldrich, 2011). Based upon the above discussion of the female entrepreneurs' early-growth network ties, the research analysis revealed that increased diversity in the female entrepreneurs' networks promoted and facilitated accesses to different business and market ties. This diverse structure secured access to firms within the industry through business ties; access to customers through market and business ties; and access to potential actors, who have knowledge, resources and networks to fit the their firms' needs, through networking platforms and events.

Interestingly, the data showed that the business ties developed since the start-up continued to support the female entrepreneurs but played another role during the early-growth stage by providing access to customers and industry firms. Further analysis of the newly business built ties indicated that these ties were more a source of establishing ties with potential actors. Building upon this, the increased diversity of these female entrepreneurs' network ties at this stage functioned mainly through building network ties that provided access to new knowledge and additional business and market contacts.

What is noticeable here is that the analysis of these early-growth network ties in terms of gender showed that most of the business ties and ties whom the met through events were male-dominated. However, most of the market ties and networking platforms were firms and companies that the female entrepreneurs were dealing with rather than with individuals. Taking this into consideration, this research suggests that the content of the male-dominated ties at this stage ties reflected the content of the business ties which was mainly building networks including access to customers and access to firms within the industry.

### **8.3.2.2 Content provided by reachability within the early-growth network**

Further analysis across the cases into the origins of the early-growth ties indicated that most of the business ties were reached indirectly but that most market ties and networking platforms and events were reached directly. Despite this, the extent of indirectly reached ties increased at this stage of building the business as most network ties, either business, market or events ties, provided access to new additional ties. Based upon the above discussion of the female entrepreneurs' early-growth network ties, the content of the indirect ties, business ties, at the early-growth stage were a source of building networks with customers and firms within the industry. Thus, this research supports the view that building networks with customer and firms within the industry was the main content provided by the network's reachability. Considering how she described the benefits of being introduced through others, F3 commented: *'Of course because today a lot of people do know us ... this definitely helps a lot, a lot, business, advice, potential collaboration, partnership with firms'*.

### **8.3.2.3 Content provided by strength of ties within the early-growth network**

The strength of ties continuum, (Figure 7.2 in the previous chapter) appeared to be dominated by weak ties at the early-growth stage in the participants' network. These weak ties mostly included market ties and networking platforms and events. Based upon the above discussion of the content of entrepreneurial early-growth network ties, the content of these market and events ties included mainly network building. The weak ties of these market and networking platforms were particularly utilised to acquire access to customers and access to potential and industry actors who could provide help and resources.

The business ties appearing at this stage were scattered along the strength of ties' continuum. Further analysis indicated that while the strong business ties provided access to customers and industry firms, the weak business ties at this early-growth stage were more a source of building additional ties with potential actors. Building upon this, the female entrepreneurs' network weak ties at this stage functioned mainly to build access to customers and potential industry actors.

#### 8.3.2.4 Content provided by density within the early-growth network

The development model of the network structure developed by the female entrepreneurs', showed a low degree of density in their early-growth networks as described in the previous chapter. This was affected mainly by the increase in diversity within the participants' network ties as new ties were added at this stage. These ties included actors from Jordan and the region as well as from technology and non-technology sectors. The cross-case analysis indicated that the low level of interconnectedness among the actors in these early network ties was a source of diversifying access and knowledge.

The female entrepreneurs indicated that low 'connectedness' between the people they met especially in events, helped to diversify their knowledge base. A comment from F4 reflected this: *'I do believe that the more people you discuss the business matters, the different opinions you get'*. Similarly, F3 commented:

*'Networking events and they helped me to get contacts with different persons, they give you insights, they let you know about new markets and what are their international trends and you sort of get a benchmark against companies who have made it in their part of the world and try to follow their steps'*.

Participants also focused on the importance of diversifying access to new actors who might provide real benefits as their network came from different groups of ties. F13's comment reflected this:

*'Through people, because you start to know different people, for example, the [client A], the most difficult client and it was the first one, they came through a network, [business owner] who met my business partner in [networking platform's X] event and then he recommended us to [client A]'*.

F10, also, stated:

*'When I attend these events as I mentioned there are a lot of connections there and networking to do, these connections benefited the company a lot, they pushed the company further'*.

This research concludes that the low density within the female entrepreneurs' early-growth network ties was a source of diversifying access and knowledge.

### **8.3.2.5 Content provided by centrality within the early-growth network**

The cross-case analysis indicated that network centrality increases the likelihood of getting access to new actors who could provide resources or open up new business opportunities. The following comment made by F6b explained this:

*'I just met someone very interesting who has a multilingual apps and his whole, um, the whole vision of his company is very similar to ours and I found so much synergy with this guy ... he is a hugely successful consultant, he spent tens of millions of dollars in his business and he is very interested in sharing our content ... I connected him with my distributor because he needed a distributor and he has a very strong connections with the material network, so, we helped each other out, I introduced him to my distributor and he introduced me to, well, he hasn't yet, but he will, we speak with each other'.*

Similarly, F11 stated:

*'When I introduce a firm to another firm, definitely, I will ensure they always remember me. Then when they see anyone who is very important to my business, they will remember me and directly they will make this introduction for me'.*

Participants also reflected that being resourceful and helpful with respect to your network actors increases the possibility of getting access to new actors. F8 commented:

*'You can't measure the benefit, it's just that you do a good deed of introducing people, in the hopes that one day you need them, then, they will introduce you to other people, but you just do it as a part of a service, as being helpful and resourceful to the clients'.*

In addition, female entrepreneurs indicated that getting access to new actors is highly likely if they connect two other actors together in their network. F7's comment reflected this:

*'I do to them, what they do to me, this is how it works. Sometimes I introduce people for them and sometime they introduce people for me ... my benefit that*

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*if I need these people, I know they will help me in the same way that I helped them*'.

F4, also, stated:

*'This eventually like they say, what goes around comes around, so, if you do something good, then something good would be done to you. So, if you introduce two in business associates then something might come out of that later on in the future*'.

Brokering between two other parties as described by participants, is a mutual role that enables the exchange of benefits and access to new connections. For example: *'It's a part of ecosystem, when you get, you also have to give'* (F3). Similarly F6b stated: *'We link people with each other. I strongly believe if you give you'll receive, that's normal*'.

The cross-case analysis, therefore, confirmed that the content of being a broker to two other actors within the female entrepreneurs' network secures additional network access. This role is a source of building the network through increasing the chance of accessing new actors whose resources or help might benefit these female entrepreneurs.

In sum, Table (8.10) summarises the main type of access provided by each structural aspect within the female entrepreneurs' networks that were dominated by men in the early stages. The analysis of the content of the female entrepreneurs' networks at this stage of building their firms, suggests that the main resource required at the stage of growing their firms was building network ties. F3 summarised this:

*'After starting up and moving on, I've been become less dependent on those mentors and more focused on building contacts with future partners and future investors. So, it's become less about asking for advice because now I have my board and I ask them for advice and we put a strategy together and more with a strategy with the board, with investors and potential business relationships*'.

Upon consideration how her business requirement changed, F14 commented that *'[Networking platform X], I need the firm to grow, enough, now I need to network*'. Thus, this study confirms that the entrepreneurs develop network ties in a way that adapts to the resources required by the firm (Hite and Hesterly 2001).

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Table 8.10: The content of the start-up network in terms of structural dimensions

Content of the early-growth network structure	Building network ties (access customer)	Building network ties (access potential players and industry actors)	Building network ties (firms within the industry)	Diversify the knowledge & network access	Building network ties (securing additional network accesses)
<i>Diversity</i>					
Business network ties	✓		✓		
Market ties	✓				
Network platforms and events		✓			
Male-dominated network			✓		
<i>Strength of ties</i>					
Weak ties	✓	✓			
<i>Reachability</i>	✓		✓		
<i>Density</i>				✓	
<i>Centrality</i>					✓

#### 8.4 The development model of the content of the participants' network

Aligned with the previous research model setting out the development of the network structures, (Figure 7.3), the research model in Figure 8.2 derived from the cross-case analysis and delineated the content of the development process within the participants' network structure. This model illustrates that the changes in the network structural characteristics of these female entrepreneurs, produces different resources and capital at each of their firms' early development stages. This development in their networks' structural characteristics appears to be in response to the different resources required at different stages.

The first development in the participants' network structure, as illustrated in the previous chapter, entails changes in their network diversity, which developed from a network comprised of a small circle of business network ties and personal ties at the



start-up stage, to one of market network ties and networking platforms and event groups added at the early-growth stage. The model (Figure 8.2) suggests that the start-up network ties, business and personal ties, functioned in an effective way to provide diverse resources. These resources included mainly human capital (knowledge and skills), legitimacy and financial resources from the business network ties, and mainly emotional support, an extra pair of hands and learning about human resources from the personal ties. Direct connections with a few business brokers at this stage helped the female entrepreneurs to reach out to different actors enabling them to diversify their sources of access to resources (Burt, 2005).

Hampton et al.'s (2011) study of the networks of female technology entrepreneurs' found that the new start-up ventures utilised mainly their previous work colleagues for obtaining advice and guidance. This dissimilarity with this study, in terms of the type of actors in the network used by the female entrepreneurs to obtain the required knowledge, comes back to the participants' utilisation of a small circle of business ties since the start-up. These appeared to be sources of the required advice rather than the personal ties found in the previous research amongst women-owned ventures in Western environments.

The model shows also that the early-growth ties, including business, market and formal events' ties, were mainly sources of building networks with different business and market ties. These ties facilitated and promoted access to customers, potential actors and firms within the industry that might provide knowledge, additional business contacts and offer opportunity for market exchange. Studies found that entrepreneurs can develop connections with different actors through engagement with exchange ties that include industry firms, clusters (Kilpatrick et al., 2007) and networking associations (Martinez and Aldrich, 2011; Spence et al., 2003). Thus, the entrepreneur's network diversity at this stage of the entrepreneurial process becomes more important, where a myriad of advantages are embedded in such a diverse structure (Martinez and Aldrich, 2011), including knowledge, access to potential customers and growth of financial capital (Semrau and Werner, 2014).

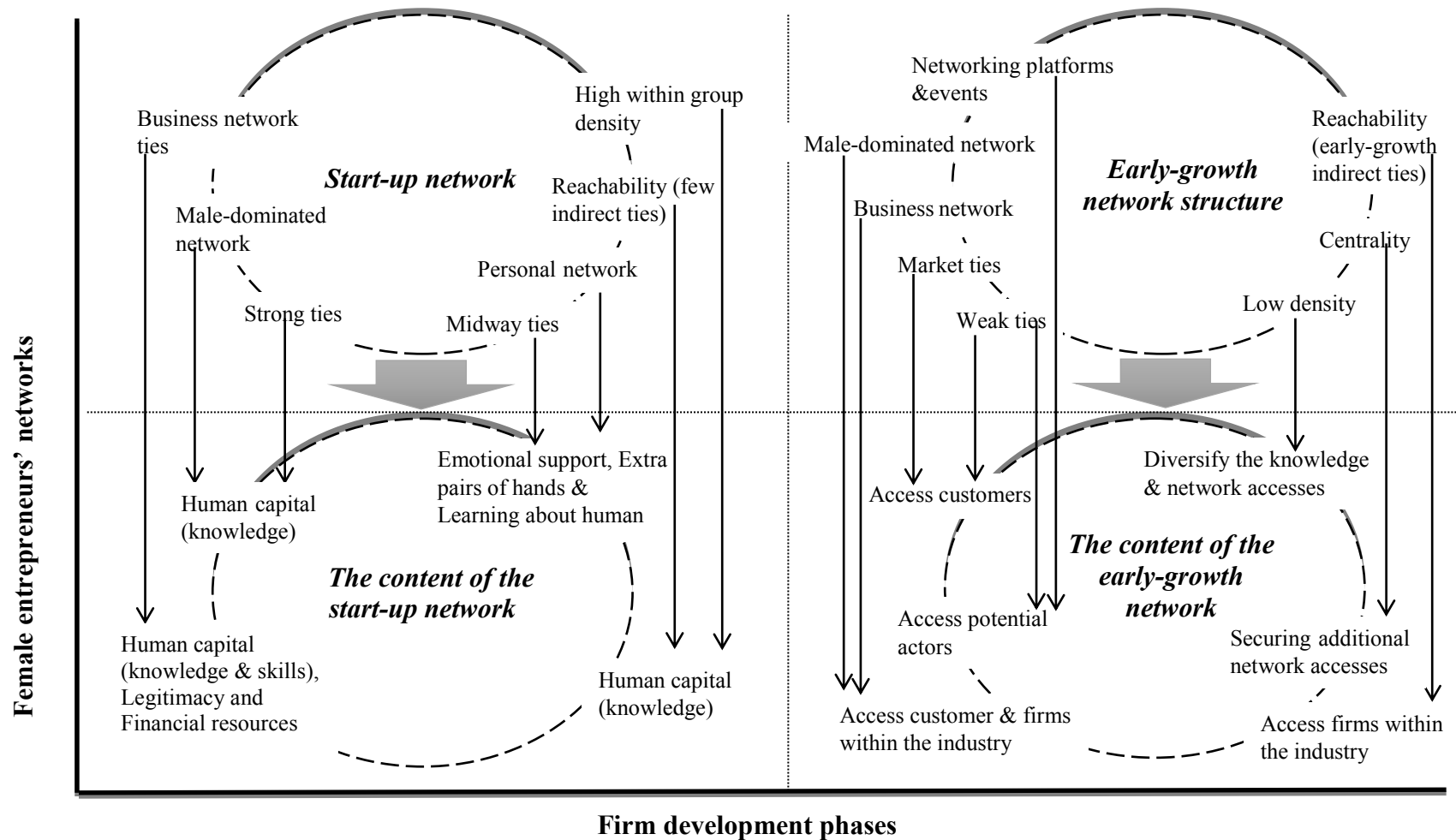


Figure 8.2: The development of the participants' network content

Source: Researcher

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The second development of the participants' network structure implies change in the continuum of their network's strength of ties. The mix of midway and newly established strong ties at the start-up stage was a source of real benefits, including obtaining knowledge, financial resources, legitimacy, emotional support and extra pairs of hand. Thus, the newly developed strong business ties of the female entrepreneurs, particularly mentors, professional, CEOs and business partners, were a source of advice, learning and information. In addition, obtaining information about employees came mainly from previous work colleagues (Söderqvist and Chetty, 2013; Jack et al., 2004). Elfring and Hulsink, (2007) indicate the importance of newly established business ties at the start-up stage in providing entrepreneurs with information on feasibility of their business model and about new opportunities.

The model, Figure 8.2, also shows that an increased share of weak ties at the early stage of growth, were a source of building network ties with customers and potential actors who have new resources. Previous researchers have pointed to the importance of the weak ties in bridging and mediating between ties within the entrepreneur's network; such ties provide access to new ties that control new resources (Sullivan and Ford, 2014; Davidsson and Honig, 2003; Burt, 1992; Granovetter, 1973). As such, by increasing the extent of the weak ties throughout their early stages of their business, entrepreneurs can secure introductions to new additional ties that provide a new range of potential resources (Sullivan and Ford, 2014).

The model, Figure 8.2, illustrates that in the participant's network, high density among each of the start-up group's members was a source of building human capital, mainly knowledge. Theoretically, Ozdemir et al. (2014) argue that high density structural embeddedness, can be more beneficial for the entrepreneurs in the creation of required knowledge. The interconnectedness among the business group members, who were mostly industry-based and had general and direct knowledge between each other, was a source that assisted these female entrepreneurs to learn from the experience of others and to obtain advice. In addition, personal ties, where social knowledge increased the interconnected among these ties, were a source of exchanging information about employees.

Building human capital (knowledge) was the main content of the indirect ties that these female entrepreneurs were able to reach at the start-up stage. As they move into the early-growth stage, (Figure 8.2), building networks with firms within the industry was the main content of their increased network reachability. Accessing these firms within the industry represents a real opportunity for those female entrepreneurs to build new business collaborations and exchanges. Building upon this, the increased reachability within these entrepreneurial networks allows more access to be gained to those providing specialist guidance (Hampton et al., 2011).

On the other hand, the research model, (Figure 8.2), illustrates that diversifying the knowledge and network access at the early stage of growth is the main advantage of the low network density. Indeed, the increased diversity within their network ties reduced their density helping in turn to access new actors who provide new knowledge and the possibility of access to new ties (Semrau and Werner, 2014; Sullivan and Ford, 2014; Martinez and Aldrich, 2011). Entrepreneurs at this early-growth stage need to move beyond dense structures and build new ties that diversify their connections that help to obtain knowledge about new business resources (Hite and Hesterly, 2001; Elfring and Hulsink, 2007).

The model also shows that the new network structural dimension, where the participants start to act as broker for two other actors in their network, increases the possibility of accessing new actors who could provide resources, a market or business opportunity. As such, centrality facilitates female entrepreneurs' access to actors who could provide resources, particularly high quality knowledge (Hampton et al., 2011).

This research, thus, suggests that some resources were more important at a particular time in building the female entrepreneurs' business. The content development model, (see Figure 8.2), argues that the human capital, legitimacy, financial resources and moral support are the resources most required to shape the female entrepreneurs' start-up network structure. While building networks with those who could provide new knowledge, additional business contacts and offer opportunities for market exchange

is the most important need in shaping the formation of their early-growth network structure.

The conclusions to be drawn from the data and building upon this model, is that the main motivation for the development of the participants' network structure and the search for new different actors occurs in response to the changes in the required business resources and capitals. This demonstrates that the entrepreneurs need new types of ties to match the firm's resource availability, accessibility and uncertain challenges (Hite and Hesterly, 2001). A comment from F3 explained: *'As I moved forward, I would want other things from other people'*. The type of resources at the early stage of growth required new types of actors, as F14 summarised:

*'Now definitely different than when I started. At first, I was looking for grants, people helping me in developing a business plan, freelancers. Now, no, the company is at a different stage, I'm looking for investors, clients, I'm trying to go to some events and I pitched my idea at an angel investment event'*.

F13 gave an example how the change in her business needs drove her to diversify her ties:

*'The first year of the start-up, we were developing content and apps. So, most of our relationships were virtual or online, either blogs, websites or freelancers. After we developed the second product, we started to build relationships more with individuals, because we needed consultation, services, we had to promote and tell people to come and see what we have done. So, our relationships start to be directly with individuals and they got much bigger after we introduced the new product. We needed to promote and bring clients, we started to go and participate in events and many people contacted us, so, the new product is what has added relationships and made this change in my network. So, the change that happened was that before the second product, our relationships were small and more virtual and after they become more and different'*.

The change in requisite resources at each stage of their firm's life cycle was the main driver in the development of the female entrepreneurs' network ties. When they first started, the focus on developing the business idea, product/service, was the main concern of these female entrepreneurs. As a result, obtaining knowledge, skills, legitimacy and initial funds were the most important resources they were looking for

when they first started. F3 commented: *'I think entrepreneurs at the start-up they need to focus on their business rather than people, but keep an open mind'*.

As the founders grew their business, building networks with the external environment was the main requirement for these female entrepreneurs. F13 claimed:

*'Typically entrepreneurs at the beginning don't pay much attention to these things, honestly, I was focused on the idea; I was interested in developing it and making it a success, rather than thinking about investment or business collaboration with other firms'*.

Based upon the above discussion regarding the content development process of the participants' network structures, this research argues: firstly, that the female entrepreneurs' network structural characteristics develop based on the change in the required business resources and capital from the start-up into the early-growth stage. It appears that their networking activities become more oriented towards planning, which included the most beneficial network ties providing the required resources that they needed at each of the business stages. This suggests that the development of the network of these participants was more of a strategic decision relating to how well those ties will serve the business. A comment from F6a explained: *'I liked his way of thinking and his work style and then I talked with him about being our mentor'*.

Second, a vital dimension in understanding the development process of the entrepreneurs' network ties is to know the kind of resources that the entrepreneurs seek to reach and obtain through the business development process.

Ultimately, this research provides empirical evidence for the theoretical network development models of entrepreneurs within the literature, which argue that the entrepreneurs' network ties change through time in response to the firms' changing resource requirements (Hite and Hesterly, 2001; Martinez and Aldrich, 2011). Further, the research model, (Figure 8.2), adds to and clarifies the type of the content (resources) needed during the early stages of building a business. As such, this research contributes to the growing debate on the entrepreneurial network-based research by providing empirical evidence and addressing the type of resources required in the early

development stages in business in order to understand the entrepreneur's network structure development process.

### **8.5 Summary**

The analysis reveals the main contents of the network structure of the female entrepreneurs' who participated in this study which are presented in the model in Figure 8.2. This chapter, therefore, has addressed the second research question regarding the content development of the network structure of Jordanian female entrepreneurs through the early stages of their technology-based firms. The next chapter, then, will present the main contributions and implications of the research for theory, policy and practice.

## **Chapter 9: Conclusions**

### **9.1 Introduction**

This research focused on the development process of the network ties of female entrepreneurs in the Jordanian technology sector, focusing especially on the structural characteristics of the networks and their contents. Network structure and its content are interrelated elements in network analysis which help provide a more in-depth and broader understanding of the entrepreneur's network ties (Slotte-Kock and Coviello, 2010) and their role in reaching and acquiring resources (Lechner and Dowling, 2003). This helps to enhance understanding and explain who the entrepreneurs reach out to, how they reach out (structure) and what they reach for (content) (Burt, 1992).

Based on an exploratory approach, this research investigated the development process of the network structure and its content in a sample of Jordanian female entrepreneurs in technology-based firms. As a result, the research examined the entrepreneurship of female technology entrepreneurs in the Jordanian context, their networks and firm's emergence and growth. Building on findings from the data collected and the data analysis process, theoretical models were developed to present and explain the development process of the networks' structural dimensions and their contents (see Figure 7.3 and Figure 8.2).

The structural model in previous research indicates that the entrepreneur's network ties develop through time from an unplanned network, which is strongly dominated by social ties to a planned and more purposeful network with greater market and business based ties (Grave and Salaff 2003; Hite and Hesterly, 2001). An important finding of this research, however, is that the development model of the participants' networks appears to be a more planned network that is dominated by business-based ties from the start-up through the early-growth stage. Personal ties are utilised less and appeared to be replaced by using business-based ties. This suggests that the research cases are more management-oriented in the process of building their network for the firms' creation and growth. The findings revealed that the changes in the required resources



through the firm's life cycle, was the main driver of development of the female entrepreneurs' network ties and defined who should be included in their networks. Therefore, this research's contribution to theory appears in terms of its exploration of the development model of the female entrepreneurs' network from the Middle Eastern context, and thus, has helped to address the knowledge gap of how and why these female entrepreneurs developed their networks.

## **9.2 Research conclusions and theoretical contributions**

This section presents the research conclusions and its theoretical contributions. Through an exploratory approach, the research findings (see Tables 9.1 and 9.2 for a summary) enrich the literature with contributions that are outlined in this section. These findings derived from this study of female technology entrepreneurs in Jordan contribute to two key areas, the network development process and female entrepreneurship. Table 9.3 summarises these two key research contributions. Relating to each area, theoretical models and views were explored, and compared to the empirical studies.

### **9.2.1 The network development process**

This research makes the following contributions to our understanding of how the female entrepreneur's network structure and its content develop through the firm's early development stages.

#### **9.2.1.1 Entrepreneurs' network development model**

Findings add empirical evidence to the theoretical models of the entrepreneurs' network development from Hite and Hesterly (2001) and Martinez and Aldrich (2011).

In their theoretical model, Hite and Hesterly (2001) argued that the entrepreneur's network ties evolve in response to the firm's changing resources. This research adds empirical evidence and extends this model by clarifying the type of the content (resources) needed during the firm's early development stages. Thus, in support of the network-based research argument, this study adds to the understanding of what are the

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types or forms of content (resources) that different network structural dimensions provide through the early business development stages.

This study revealed that the human capital, financial resources, legitimacy and business idea validation are the dominant content of the female entrepreneurs' start-up network structures, while building networks with business and market ties is the dominant content of their early-growth network structures. The findings of this research suggest that the change in the entrepreneurs' network structure during the firms' early development stages yield different forms of resources that are required and reached at each of these stages.

**Table 9.1: Summary of the research findings: development of the network structure**

<b>Topic</b>	<b>Findings</b>
<i>The development process of the network structure</i>	
<b>Network diversity</b>	<p>The diversity of the female entrepreneur's network ties, in terms of the ties' type, increases through time, and is dominated by business ties during the start-up stage. However, it includes more market ties and networking platforms and events as they move into early-growth.</p> <p>The female entrepreneur's network ties are male-dominated during the business formation process, which decreases their network gender diversity.</p>
<b>Network reachability</b>	<p>The other actors who acted as a broker within the female entrepreneur's network increase through time:</p> <p>The female entrepreneurs are able to reach through a few direct business contacts to new actors when the firms first start; however, their ability to reach beyond their direct contacts through different ties was greater by the early-growth stage.</p> <p>The main introductions to new actors within these female entrepreneurs' networks were through business ties.</p>
<b>Strength of ties</b>	<p>The strength of the network ties of the female entrepreneurs change through time; they are dominated by strong and midway ties during start-up stage but include more weak ties as they move into the early-growth stage.</p>
<b>Network density</b>	<p>The female entrepreneur's network density decreases through time, where links are high among each group of ties involved at the firms' start-up stage; however, it decreases among the ties involved in the firm by early-growth stage.</p> <p>Despite this, the interconnectedness among the female entrepreneurs' business ties when they moved into the early-growth stage becomes more industry clustered ties.</p>
<b>Network centrality</b>	<p>The female entrepreneurs' centrality in being a broker for two other ties within their networks starts at the early-growth stage.</p> <p>Their centrality role results from increasing the diversity of their ties and moving beyond the start-up challenge of focusing on developing the business idea.</p>

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**Table 9.2: Summary of the research findings: development of network content**

Topic	Findings
<i>The development process of the content of the network structure</i>	
<b>The content of the start-up network</b>	The female entrepreneurs' start-up business network ties are a source of obtaining financial resources, building legitimacy and human capital.
	The female entrepreneurs' start-up personal network ties are a source of emotional support, extra pairs of hands and learning about human resources.
	The female entrepreneurs' start-up male-dominated networks are a source of building human capital (knowledge).
	The main content of the strong business ties is human capital particularly knowledge.
	The main content of the midway ties are emotional support, extra pairs of hand, learning about human resources.
	Legitimacy and financial resources are the main content of the business ties at both levels: strong and midway ties.
	The start-up female entrepreneurs' network high within group density networks facilitate building human capital (knowledge).
	The start-up female entrepreneurs' network reachability, to indirect ties, is a source of building human capital (knowledge).
<b>The content of the early-growth network</b>	The female entrepreneurs' early-growth network diversity, market, networking platforms and business ties, are a source of building network ties.
	The female entrepreneurs' early-growth market ties are a source of building network ties with customers.
	The female entrepreneurs' early-growth ties with networking platforms and events are a source of building network ties with potential and industry actors.
	The female entrepreneurs' early-growth business network ties are a source of building network ties with customer firms within the industry.
	The female entrepreneurs' early-growth male-dominated networks are a source of building network ties with customers and other firms within the industry.
	The female entrepreneurs' early-growth weak ties are a source of building network ties with customers and potential industry actors.
	The female entrepreneurs' early-growth low network density is a source of diversification of knowledge and network access.
	The female entrepreneurs' early-growth network reachability, to indirect ties, is a source of building networks with firms within the industry.
	The female entrepreneurs' early-growth network centrality is a source of building networks through increasing the possibility of accessing new actors.
	Building network is the main requirement that shaped the development of the female entrepreneurs' early-growth network structure.

**9.2.1.2 Female entrepreneurs’ network development research**

Review of the research that examined the female entrepreneur’s network role in the firm’s development process reflects that there have been few studies that have examined the network development process, and all of these studies which are Western-based. These studies are: two research studies investigated the development of different network structural qualities by Hampton et al., (2011) and (2009) and two studies which examined the gender analysis of the development of the entrepreneurs’ network composition development by McGowan et al., (2013) and Klyver and Terjesen (2007). This research extends these studies through an exploration of the network development process in the new social/economic context. Moreover, it adds to these studies by examining the development process of the content of the female entrepreneur’s network structure.

**Table 9.3: Summary of the research contributions**

Research area	Key research findings and contributions
<b>Development process of the network structure and content</b>	Adds empirical evidence to the entrepreneur’s network development theoretical model, of Hite and Hesterly (2001) and Martinez and Aldrich, (2011). Extends this model by exploring the type of content (resources) the entrepreneur needs throughout the firm’s early development stages.
	First study of content development of the entrepreneur’s network structural dimensions.
	Adds to the literature on the development process of different network’s structural characteristics, diversity, reachability, density, strength of ties, and centrality.
	Adds to the literature on the content of network diversity, reachability, density, strength of ties, and centrality.
	Proposes a new model of the development process of network structural dimensions of female entrepreneurs from one of the Middle Eastern societies.
	Adds new work on the development process of the female entrepreneur’s network in the firm’s early development stages.
	Proposes the quality of business interaction as an attribute to define the network strength of ties.
<b>Female entrepreneurship</b>	Adds to the literature on the study of women’s entrepreneurship from Jordan as a case study of Middle Eastern societies.
	Extends how and why female entrepreneurs in technology-based firms develop their network ties, in a new social/economic context.
	Adds to the literature the content of the female entrepreneur’s network structural dimensions

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These studies examined the network development of female-owned entrepreneurial firms of different ages, in new ventures and established firms. This research, however, examined the evolution of the female entrepreneur's network through the early development stages (i.e. emerging firms). Therefore, this research adds new literature on how and why female entrepreneurs develop their network in the start-up and early-growth stages.

### **9.2.1.3 The female entrepreneurs' network development model**

Another theoretical contribution was the extension of the literature through the addition of a new perspective on the network development model within the as yet unstudied context of new technology-based firms created and developed by female entrepreneurs in Jordan, as an example from Middle Eastern societies. This model was presented in the analysis of the female entrepreneurs studied where it was clear that the development of the structural dimensions of their network ties that were used to access and obtain resources, was not precisely the same as described in previous network-based research. Unlike previous research where the entrepreneurs' network structure developed from an unplanned network to a planned and more purposive network (Hite and Hesterly, 2001), the female entrepreneurs' network development model identified demonstrated a more planned orientation from the start-up stage throughout the early-growth stage. This model is dominated by business-based ties at the start-up stage and is consistent throughout relying on formal based network ties, including business, market, formal events and networking platforms at the early-growth stage.

Thus, understanding how Jordanian female entrepreneurs network for resource acquisition in the technology-based firm's early development stages, casts new light on entrepreneurs' network development processes and addresses the gap of how and why those female entrepreneurs develop their network ties.

***Network diversity and reachability***

Prior network-based studies in both entrepreneurship and female entrepreneurship literatures indicate the importance of personal ties including the family, friends and previous work colleagues as a main gateway for the entrepreneurs at the start-up stage to obtain or reach the needed resources (e.g. Semrau and Werner, 2014; Hampton et al., 2009; Lechner and Dowling 2003;). Previous network development studies also argue that personal ties, previous work colleagues, family and friends, are highly valuable for entrepreneurs in securing resources in the emerging stages (Semrau and Werner, 2014; Hampton et al., 2009; Lechner and Dowling, 2003; Hite and Hesterly, 2001; Larson and Starr, 1993). This study, however, revealed that business ties were the main gateway for the participants at the start-up stage to obtain and reach the required resources. These start-up business network ties of the female entrepreneurs are a source of different resources including human capital, financial resources and legitimacy and business idea validation.

The female entrepreneurs benefit from their personal ties given that these personal midway ties are the main source of emotional support, extra pairs of hands and learning about human resources. However, these ties appear to be unimportant in terms of obtaining and accessing resources to implement and sustain the female entrepreneurs' business opportunity. This research revealed that the presence and usefulness of the participants' personal ties are not precisely the same as described in the literature.

The participants' network diversity and reachability increases through time; however, the use of professional business network ties and access through these ties play an important role in venture establishment and growth. The development theme in these network structural dimensions sheds new light on how Jordanian female entrepreneurs network for resource acquisition in technology-based firms' early development stages.

***Working within a male-dominated network***

The findings from this research indicate that the prominence of male-dominated network ties is consistent throughout, in what appeared to be patterns different from

those typically observed in Western-based research (Hampton et al., 2011; 2009; Klyver and Terjesen (2007). Hampton et al. (2009) argue that women do not have strong participation in business associations, networks and clubs, which are traditionally dominated by men. In the case of Jordanian female technology entrepreneurs, it appears that the participants used the formal business networks, particularly organisations, formal networking platforms and events, to access and benefit from this network. This, also, sheds new light on how the female entrepreneurs network for resource acquisition in the technology-based firms' early development stages.

### ***Strength of ties continuum characteristics***

Within the entrepreneurial network literature, the strong-tie continuum locates family and friends as strong ties at the upper end of the continuum whereas suppliers, competitors, customers and potential players ties are located at the low end of the continuum and considered weak ties (Jack et al., 2004; Söderqvist and Chetty, 2013), and business relationships are located between the two ends (Jack et al., 2004). These research findings indicate that the market and events ties are mapped as weak ties at the low end of the participants' strength of ties continuum and the business ties ranged from the low to the upper end; however, family, friends and previous work ties are located at the midway of the continuum.

There is evidence that the participants built new strong ties from the start-up stage through early-growth stage with some business ties. These ties were built through constructing over time a level of knowledge, high quality business interactions, trust, and mutual care and follow-up. These ties appeared to replace strong personal ties that were mapped at the top of the strength of ties continuum as appeared in the previous research. This also increases understanding of the characteristics of the Jordanian female entrepreneurs' strength of network ties in the early firm development stages.

The definition of the network strength of ties is consistent with the previous research as it is defined as based on the level of closeness (Kontinen and Ojala, 2011; Jack et

al., 2004), trust (Kontinen and Ojala, 2011; Jack, 2005), knowledge (Jack 2005) and further, this research adds the quality of business interaction. The quality of business interaction, according to this research is based on applicability (Jack, 2005), quality of interaction as it increases overtime (Hite, 2005), follow-up and business impact. Thus, this research extends the definition of the strength of ties to include the quality of business interaction as an attribute for defining the tie's strength.

### ***Network density characteristics***

Previous research by Martinez and Aldrich (2011) and Hite and Hesterly (2001) argues that the entrepreneur's network is characterised by high density among the entrepreneur's network ties, as the personal knowledge is high among all the actors at the start-up stage and it decreases through time. This research found that there is a high interconnectedness of network ties at the start-up stage of the study's female entrepreneurs; however, this appeared to be so among the actors of each group, business as well as personal ties. This density continued to be high among business ties through time; however, it decreases within each group of early-growth ties, market and events ties. This, therefore, increases the understanding of the female entrepreneur's network density characteristics in the technology-based firm's early development stages in Jordan.

### ***Network centrality: brokering others***

The previous research points to the nature of development of the female entrepreneur's network centrality, which increases as they move to the growth stage (McGowan et al., 2013; Hampton et al., 2011). However, findings from this research revealed that the female entrepreneur's network centrality and their role as a broker to the other ties within their network, appears when their business moves into the early-growth stage. For the participants being a broker to others started at the early-growth stage when their network ties reached greater diversity and went beyond the start-up challenges and requirements for focusing on the business idea. The development theme in these network structural dimensions sheds new light on how the Jordanian female



entrepreneurs' networks for resource acquisition evolve in the early development stages.

### **9.2.2 Female's entrepreneurship literature**

The other key area to which this research contributes is the literature on female entrepreneurship. This contribution is made in two areas.

#### **9.2.2.1 Female entrepreneurship in the Jordanian context**

The current research contributes theoretically through addressing a gap in the women's entrepreneurship literature about female entrepreneurial activities from Middle Eastern societies. In fact, entrepreneurship literature lacks studies showing the women's experience of enterprising without gender comparisons (Hamilton, 2013). Brush and Cooper (2012) indicated that the female entrepreneurship studies represent less than 10% of all research within the entrepreneurship field, where the vast majority of this literature is Western-centric. Studies from the Middle East are absent and 'the opportunities for us to test theories and learn more about the various ways women choose entrepreneurship and carry out entrepreneurial endeavours are vast' (Brush and Cooper, 2012, p. 4). This research is one of the first studies that focusses on female entrepreneurship in Jordan as a case study from the Middle East, and the first of its type to explore the female entrepreneurial process in the early development stages from this locality. Therefore, regarding the context of this research, the study adds to the women's entrepreneurship literature.

#### **9.2.2.2 Female entrepreneurs' network research**

Research on the female entrepreneur's networking and network activities is still at a very early stage and there is a lack of well-developed studies. In this literature, studies discussed different issues including: gender difference in the network compositions (Jue-ping, 2014; Klyver, 2011; Ibarra, 1993; Cromie and Birley, 1992; Smeltzer and Fann, 1989); the impact of the network on the firm's performance (Hitt et al., 2009; McGregor and Tweed, 2002) and the social capital of women as an entrepreneur and capital provider (Brush et al., 2002). Most studies in this literature are concentrated on

some network structural dimensions, including mainly personal strong ties and business ties. Studies dedicated to exploring different network structures, are limited: two such studies are by Hampton et al., (2011) and McGowan et al., (2013). Further, the content of the network structure an aspect of network analysis is absent from these studies.

This research identifies for the first time the content of different female entrepreneurial network structural dimensions. Therefore, this research extends the literature and should be seen as an initial effort exploring the content of the female entrepreneur's network structure within the female entrepreneurship literature.

The research also makes some other more minor contributions to knowledge in the following areas.

### **9.2.3 Resource dependency theory**

Resource dependency view has largely been employed to examine the use of inter-firm relationships (i.e. alliances and collaborations) to manage access to the resources required for established firms and at a more organisational level. This study suggests how the female entrepreneurs in the early development stages utilise ego networks to access and obtain the required resources. Evidence is presented as to how changes in aspects of network density, diversity, reachability, centrality and the presence of strong and weak ties influence the types of resources available to the entrepreneurs. This helps female entrepreneurs reach and obtain access to financial and human capital and gain business idea validation at the start-up stage, and build additional network ties in the early-growth stage. Resource dependence theory can be extended, according to the research findings, to the context of the entrepreneur as the hub of her firm in the early development stages through suggesting how they might use their ego networks to access and obtain resources and manage resource dependency.

### **9.2.4 Understanding network change and drivers of change**

This research also extends the understanding of network change by exploring the interrelated network elements of analysis, structure and content, at each stage of the

firm's early development. This research identified how different structural dimensions (diversity, reachability, strength of ties, density and centrality) and their contents change from the start-up to the early-growth stages. Networking behaviour of the female entrepreneurs studied is driven by the type of resources they needed at each stage and, therefore, changes in the network ties that they utilised to obtain and reach these resources. Thus, changes in both the network structure and content have been integral in enhancing the explanation of how the entrepreneurs' networks develop. As such, this research makes a contribution to the understanding of network change and drivers of this change.

### **9.2.5 Factors influencing patterns of network development**

In this research socio-cultural characteristics as well as the sectoral context appear to play vital roles in the networking and network activities of female entrepreneurs in technology-based firms from Jordan. First, with regards to the sectoral context, the absence of the knowledge among the personal ties that is required by technology-based firms from the outset of development, pushed female entrepreneurs to rely on professional business ties. Second, the pre-entrepreneurial career of these women played an important role in their networking behaviour.

Third, the social context, including the family preference for a secure job for their daughters, and on the other hand, the women's preference to prove greater professionalism in her business in order to avoid the social myths surrounding her economic and traditional roles, has an effect on the type of ties they utilised to start and grow their businesses. Finally, limited availability of informal investments, where low income capita in Jordan and high fear of risk might be influential, drove women to use more business network ties to secure financial resources to start and grow their businesses. Understanding these factors as they affect the networking and network behaviour of Jordanian female entrepreneurs, sheds new light on the entrepreneurs' network development processes.

### **9.2.6 The research process contribution**

This research brings together literature from female entrepreneurship, firms' early development stages, female entrepreneurs' network structure, content and evolution and the entrepreneurship process of female entrepreneurs within an unstudied social, economic and institutional context. This provides a novel contribution that is supported empirically. This research also constructed a data set on the female entrepreneurs' network development from one of the Middle Eastern societies which helps set out a future research agenda.

## **9.3 Research implications**

This section outlines the main implications that are generated from this study, including implications for theory, policy and practice.

### **9.3.1 Theoretical implications**

The research's value sits in its contribution to knowledge, which lies in understanding how female entrepreneurs in Jordan's technology sector, develop their networks to obtain and access the resources they need at the early development stages. The research contributes to the literature on the process of female entrepreneurship, female entrepreneurs' network activities and development. Thus, as mentioned above, this research provides an opportunity for extending, adding to and enhancing the understanding of the existing studies in these literatures and resource dependence theory.

The methodological approach adopted allowed the researcher 'to shed empirical light about some theoretical concepts or principles and strive for generalisable findings or lessons learned that go beyond the setting for the specific case or experiment had been studied' (Yin, 2014, p. 40). In this sense, some of the qualitative research's findings and lessons can be potentially applied to different situations and be applicable through reinterpreting the results of other situations (Yin, 2014). Building upon that, these research findings, arguments and recommendations might be applicable to other female entrepreneurs that operate in the technology sector of other MENA regions. In

fact, most of the research participants acknowledged the importance of many regional industry meetings and networking platforms in building many of their business and market ties and then accessing some resources. It can, therefore, be argued that research findings enhanced the understanding how female technology entrepreneurs in Middle Eastern societies develop their networks to obtain and access resources.

In addition, the evolution of the content of the entrepreneurs' network from financial resources, human capital and business idea validation at the start-up or emergence stage, and building additional networks with new actors at the early-growth stage is not a characteristic differentiating entrepreneurs from Middle Eastern societies. It could be entrepreneurial behaviour adopted by early development entrepreneurs in general and in any institutional context. Thus, it could be argued that the theme of network content evolution emerging from this study facilitates understanding of why early stage entrepreneurs in general develop their network.

### **9.3.2 Policy and institutional implications**

The high use of formal business ties to obtain and access required resources that appears in the female entrepreneurs' networks in technology firms in the early development stages, might indicate a constriction in their economic participation as a business owner. It seems that without using the formal ties to obtain and access the needed resources, starting a business is challenging for women in Jordan. Recently, the statistics from some technology business accelerators, competitions and incubators have shown an increasing number of women who participate in these competitions and apply to these organisations. In Jordan and the MENA region, a high percentage of technology business plan competition participants and accelerator candidates are women and exceed the women's participation percentage in many global technology places (Schroeder, 2013). The question raised here is what happens, and what other options are available for women who do not get access to accelerators or benefit from these competitions.

In fact, the implications at the institutional level for encouraging networking activities and contributing to the female entrepreneurs' efforts in their network development, are

more complex in Jordan. These efforts will not meet with a high rate of success if there is limited governmental, private and educational focus on entrepreneurial activities at first hand. Thus, in terms of institutional implications, this research will discuss firstly some implications for increasing entrepreneurial activities, and then will move on to discuss some institutional implications for enhancing female entrepreneurs' networking activities.

### ***Entrepreneurial activities***

Entrepreneurship culture cannot spread without a collective effort and vertical integration among different social and economic parties including schools, universities, government organisations, social institutions and the private sector.

At the social level, families' preference for the secure job for their daughters is one of the factors that could affect the level of involvement in female entrepreneurship. The family's limited role and in some cases and the limited conviction of female entrepreneurs in choosing to start a business may hinder many females or even males, as the participants indicated, from pursuing their passion to start a business. Thus, the role of social institutions in particular is very important in creating discussion and debates and demonstrating examples of the importance of entrepreneurial activities to society.

At the governmental level, encouragement for early entrepreneurial activities in terms of tax discount and infrastructure, could attract many informal investors (friends and angel investors) and formal investors from the private sector and reduce their fear of risk of investing in new entrepreneurial ideas.

At the educational level, Jordan has a significant opportunity to take advantage of its highly educated, youthful population. The MHESR statistics indicate a high percentage of students graduating from science, engineering and technology schools, with 48% of the graduate student population from these subjects in 2012/2013 being female. It is clear that those young people, if successfully provided by the curriculum

with knowledge, practical skills and tools in entrepreneurship fields, may help support the development of an entrepreneurial culture within the country (Masri et al., 2010). The Arab States Report suggests that the policy framework for entrepreneurship education in Jordan is good, but more still needs to be done at the level of policy implementation (Masri et al., 2010). This represents a wake-up call for the all bodies as the entrepreneurial spirit is partly stimulated and motivated by the education system and should be developed and nurtured at an early age (FYGL and BC, 2011).

### ***Female entrepreneurs' networking activities***

At the educational level, this research suggests that alongside increasing the focus on the entrepreneurial technical and managerial aspects of education, the role of all types of network ties (social and formal business ties) should be addressed and networking activities should be designed. As necessary complementary efforts, governmental programmes should be directed towards building and fostering channels with a range of different sources of resources including business owners, investors, well-established firms, other entrepreneurs and regional and international opportunities. Thus, increased efforts in building entrepreneurs' networking meetings and clubs by different parties, entrepreneurial business organisations, government business support organisations, private firms and universities, is required. Women-owned businesses and women at managerial levels in different government and private sectors should be encouraged to participate in these networking meetings and clubs. This participation from these women could encourage and bring many female and would-be entrepreneurs to engage and benefit from these meetings.

At the institutional level, the idea of the networking activities (meeting, clubs and seminars) in Jordan is very new and limited to the capital Amman. Therefore, more of these networking initiatives are required and should be spread into the other cities of the country. Creating more channels through these networking meeting and clubs between resource owners and female and would-be entrepreneurs would benefit their attempts to enter and flourish in the entrepreneurship field.

Industry-centred organisations and events appear to be beneficial for female entrepreneurs in this study helping them to build strong deep ties in the early business development stages. Thus, for the start-up stage, where entrepreneurs need trusted feedback on their business models and are searching for newness resources, organisational efforts in creating business industry-focused networking platforms are needed.

These industry-centred networking organisations are very few in number and type. In addition, the high cost of being a professional member in the industry organisation platforms, particularly in the technology sectors, would not encourage many entrepreneurs and would-be entrepreneurs to become involved in their activities. Thus, generating more of these networking organisations and in different technology fields, might effectively promote their services, and providing both a high membership discount to entrepreneurs in start-up and early-growth businesses would be good support together with a networking facilitator for those female entrepreneurs and entrepreneurial activities in general

Greater exposure of successful female entrepreneurs in Jordan's technology sector as role models and an example for other women is important. Therefore, there is a need to increase the presence of successful female entrepreneurs from all venturing levels in the events, as organisers and speakers sharing their experience with other entrepreneurs, particularly other female entrepreneurs. In addition, building female entrepreneurial hubs in each industry that gather and support organisations, could expose both male and female entrepreneurs to the female entrepreneurs' experiences and open up opportunities for building more mixed-gender networks.

### **9.3.3 Practical implications**

An agreement has emerged among scholars that entrepreneurs can have some control over their networking activities and network tie development through good planning and mentoring support (Hite, 2005; Dubini and Aldrich, 1991). Under these conditions, literature suggests that understanding configuration of the network structure would be advantageous in developing strategic implications for entrepreneurs



(Martinez and Aldrich, 2011; Hite, 2005). Strategic implications reflect that ‘entrepreneurs do not simply work with the conditions of networks as they find them, but rather they consciously play a role in creating and reshaping them’ (Martinez and Aldrich, 2011, p. 24). Therefore, this section includes some strategic implications for practice with regard to female entrepreneurs and would-be entrepreneurs at the individual level in Jordan’s technology sector.

Entrepreneurs might be able to identify the most advantageous network tie configuration that might promote more entrepreneurial effectiveness (Martinez and Aldrich, 2011). If so, both female entrepreneurs and would-be entrepreneurs could identify the type of ties (know who to ask, when to ask, what to ask for and how to reach them) and then they could proactively and strategically enhance their capacity to reach out for resources needed by the business (Hite, 2005). Based on the research findings regarding the network development of this sample of Jordanian female entrepreneurs in technology-based firms, two main strategic implications can be identified.

### *Enhancing firm start-ups*

For the business start-up, a number of strategic implications for female entrepreneurs and would-be entrepreneurs in Jordan’s technology sector could be suggested:

**First:** this research suggests that the important issue in building effective network ties is to evaluate the resources that are available to the female entrepreneurs and would-be entrepreneurs, and then define what resources are required or lacking in order to start their businesses. The research findings indicate that the human capital, financial resources and legitimacy and business idea validation are the main resources obtained through the start-up network structure of the female entrepreneurs. This structure is characterised by using business ties; working within male-dominated networks; building new strong ties; involving the interconnectedness of group of ties and benefitting from few indirect ties.

**Second:** following the suggestion by Aldrich (1989), the first strategic step of the female entrepreneurs in managing their network activities is to chart their present network ties. Personal ties, particularly at the start-up stage, provide good direct and indirect access to the required resources as a consequence of the limited internal resources and resource search capability of the start-up entrepreneurs (Hite and Hesterly, 2001). Thus, starting with strong personal ties, female entrepreneurs have to check their relationships and list the possible actors who could be approached for direct or indirect access to resources (Aldrich, 1989). Theoretically and practically, strong personal ties could be the optimal ties for entrepreneurs at this stage as they represent a source of trusted feedback that is hard to acquire at a low cost (Martinez and Aldrich, 2011; Elfring and Hulsink, 2007).

In the Jordanian female technology entrepreneurs' case, personal ties appear to be limited in their role for accessing and obtaining resources. Within the literature there are two options for the entrepreneurs who have strong personal ties that do not provide direct and indirect access to the needed resources: first, use friends and acquaintances of their strong personal ties (Jack, 2005; McEvily and Zaheer, 1999); second, participating in and using industry events to obtain access to knowledge sources and industry actors (Elfring and Hulsink, 2007). This access through events gives entrepreneurs an opportunity to build new ties and through time, a large number of these new ties will fall by the wayside but some of them will become strong trusted ties playing a vital role in securing resources (Elfring and Hulsink, 2007).

In the case of the Jordanian female entrepreneurs in technology firms, the new start-up connected business ties do appear to provide a good level of resources. Some participants succeed in building up these ties that started as weak and then develop into trusted strong ties through the start-up and early-growth stage. These ties include professionals, mentors, business partners and firms. Theoretically and practically, these new strong ties are a source of trusted feedback and advice at the start-up stage as well as other resources as time goes by (Elfring and Hulsink, 2007).

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For start-up female entrepreneurs and would-be entrepreneurs, obtaining valuable knowledge at this stage and securing access to additional resources as the business grows may be enhanced through building a group of new strong ties. Building new, strong and deep ties, as appeared in this research, requires the creation of a level of knowledge, high quality of business interaction, trust, and mutual care and follow-up. This may explain why some participants obtained valuable benefits from a specific type of ties, whilst others did not obtain the same benefits from the same type of ties.

**Third:** formal direct connected ties with business organisations, accelerators, business partners, professionals and entrepreneurship competitions are the first ties used by participants at the start-up stage to reach additional ties. Yet, using different personal and business ties to reach through to new resources, can be more effective for accessing knowledge and market opportunities since the firm's emergence. This may explain why three of the research cases, which used both personal and business ties for indirect access, were more able during the start-up phase to find access to additional ties who may provide the needed resources.

Formal direct and indirect connected business ties, particularly organisations and entrepreneurship events, can provide at the start-up stage an access to the male-dominated network in the technology sector. This network appears to be a source of building more human capital in terms of advice, information and learning. Thus, these organisations and participating in formal events could be a strategic tool for entering, engaging and benefitting from the male-dominated business network.

**Fourth:** Jordanian female technology entrepreneurs who used a few business ties to widen access options at the start-up stage, increased the probability of accessing a group of ties that are interconnected to each other. This dense business network facilitates obtaining advice and learning from other's experiences through sharing information. For those female entrepreneurs and would-be entrepreneurs, although dense networks provide real benefits at start-up, Aldrich (1989) suggests that female entrepreneurs have to check their network density (how many know each other in their

network) to avoid involvement in a network that is too inward looking and limits their effort to gain more diverse ties.

**Fifth:** for start-up female entrepreneurs, making intense use of formal business ties can be disadvantageous and defining the right valuable actors could be challenging. The cost and time required in building and strengthening trusted new ties is very high. In addition, these formal business ties particularly with individuals usually start with a lack of thorough knowledge and thus, the probability of receiving trusted feedback is unknown. This may explain why some participants, in particular those who started independently, realised after investing some time in building new ties that these ties are unable to provide good insights. Female and would-be entrepreneurs who use indirect ties, personal or new strong ties, as reference for defining the trusted source, increase their ability to access valuable actors who can introduce them to potential strong ties. This also may explain why incubatee female entrepreneurs at the start-up stage always use the incubated organisations and accelerators to endorse and access the actors that they need.

**Finally:** defining the optimal network composition is a challenging process at this stage. This is affected by many issues relating to the entrepreneur's backgrounds (insider or outsider to the industry); the firm's innovation type (radical or incremental) (Elfring and Hulsink, 2007); and the entrepreneurial network configuration (Martinez and Aldrich, 2011). For example, in the very early start-up stage, some participants who are outsiders to the technology sector utilised business organisations, accelerators and professionals to build human capital and gain access to the industry leaders. This human capital could be accessed directly through professionals or indirectly through business incubators and accelerators that would connect these female entrepreneurs to mentors, professionals and training sessions. On the other hand, some participants who pursue opportunities in their prior experiences, utilised national and international entrepreneurship competitions to build their firms' technology start-up legitimacy and to access human capital, particularly managerial skills.

***Increasing firms' early-growth***

The second implication is that when their firms move into the early-growth stage, female entrepreneurs have to adjust their network configuration to match the requirements of the stage reached. To achieve more business growth, a number of strategic implications for female entrepreneurs and would-be entrepreneurs in Jordan's technology sector can be suggested:

**First:** to build effective network ties, female entrepreneurs have to evaluate and define what the missing or required resources are which they need to grow their business. The research revealed that building network ties could provide new market knowledge, additional market contacts and offer opportunities for business exchange; this is the main content obtained and reached through the early-growth network structure of the female entrepreneurs. This structure is characterised by involving a good level of network tie diversity; growing the share of weak network ties; reducing network density; benefitting from more indirectly connected ties to reach out and start brokering relationships for others.

**Second:** practically and theoretically, female and would-be entrepreneurs, in order to sustain their business growth, should extend their ties to include more market ties (buyers, inter-organisational cooperation and firms) and use access to different actors (Butler and Hansen, 1991). Theoretically, over-dependence on strong ties would limit the strategic growth of the firms as they constrain the scope of the entrepreneurs' reach (Martinez and Aldrich, 2011; Hite and Hesterly, 2001). Thus, to achieve strategic growth in their networks, female and would-be entrepreneurs must shift drive their network ties to achieve a more diversified configuration, including more weak ties and a wider range of brokers (Martinez and Aldrich, 2011).

**Third:** for female entrepreneurs and would-be entrepreneurs, over-reliance on the business support organisations as the firm grows, is a strategic growth problem since the extent and type of resources required by the firms change. Thus, benefitting more from other institutional avenues, particularly networking platforms and events, is

valuable as a first step to building on and broadening their business knowledge and ties. It appears that all female entrepreneurs, either those who started through incubators and accelerators or who started independently, benefit from participating in the formal networking platforms and events. Female entrepreneurs and would-be entrepreneurs can access important business and market actors through joining and participating in events of professional networking and industry meetings.

Participating in these events also increased reachability within a clustered-business network, mostly an industry-focused network. At this stage, this network enables access to market ties and building inter-firm ties. The possibility exists through these avenues for getting to know and becoming known to the other actors (organisations, investors, other entrepreneurs, customers and business partnership) and for access to actors with the capability to offer financial resources for growth, knowledge and inter-organisational and market ties. Many weak business and market ties and potential strong ties can develop through these events and could represent the first step in the very early-growth stage in building more flexibility into their network without high dependency on the organisational avenues.

**Fourth:** the centrality the female entrepreneurs have in their network also has implications for female entrepreneurs and would-be entrepreneurs in the technology sector. Although being central and brokering between actors embeds real benefits in the start-up stage, it appears to be more effective at the early-growth stage. Thus, these would-be and female entrepreneurs could benefit strategically from this role more at the business growth stage. Increasing the diversity of network ties is one of the techniques that could be used to foster the ability to play this role within their networks.

#### **9.4 Research limitations**

Although this research has different advantages, there are some issues that could represent a limitation. Research scope represents a potential limitation, which is restricted to studying female entrepreneurs from the technology sector in Jordan. This might represent a potential research limitation to the research as there is a limit to the

generalisability to the entrepreneurship of female entrepreneurs in other industries within Jordan as well as to the entrepreneurship experience of other female technology entrepreneurs in the MENA region. Despite this, theoretically these findings represent a foundation for future research.

This research, on the other hand, was conducted in a new geographic context where previous studies are not available against which this study can be evaluated and benchmarked. This limitation was tackled by building to pilot studies that were carried out to build an initial understanding of the phenomenon.

Some other issues have arisen through the process of conducting this research including limited database availability and access to the women-owned firms in Jordan. Although using personal contacts with different bodies helped to learn about women-owned firms in the technology sector, the effectiveness of the search might have been affected by the fact of searching in the same circle of networks. Thus, an attempt was made to use other actors within Jordan's technology sector, some CEOs and other entrepreneurs. Also, despite this search resulting in a limited number of potential participants, the sample included participants who either had or had not been involved in incubators or accelerators. This could help to reduce the probability of bias in the research findings given that these incubators and accelerators provide the entrepreneurs with networking opportunities.

## **9.5 Future research**

Future research is needed to clarify, refine, deeply analyse, empirically study and theoretically extend the research models, including the structural development model, content development model and strength of ties continuum model. In emphasising the value of studying women in their own right rather than comparing them with men, the findings of this study strengthen the calls for more research studying women's experiences as entrepreneurs to aid further theorising in the entrepreneurship field.

The findings from this research revealed that the Jordanian female entrepreneurs' technology network is male-dominated, and using the business network and formal

events helped to access and build this network. Future research is called for to explore in a more detailed analysis, the advantages and disadvantages of the male-dominated network, particularly in the technology sector. In addition, research on the development process of the gender composition of ties within the Jordanian female entrepreneur's network from different sectors is needed to understand the industry effect on this composition.

Research is also needed to evaluate the effectiveness of using the formal business network ties to access and obtain real benefits from this network. This network also appeared to be play an important role in helping some of the research participants to access financial resources including grants and funding from angel investors and venture capitalists. Thus there is a need for studies which focus on the female entrepreneur's financial network, in particular, the role of different type of network actors in accessing finance for business start-up and growth.

Potential factors relating to network reachability and centrality development of the sample of Jordanian female entrepreneurs from the Middle East were briefly explored in this research and now a more in-depth exploration of these factors is needed. Research should address the relationship between the development of the entrepreneurs' network centrality in terms of being a broker between others in their network and the development of network tie diversity and network size, as well as the influence of the firm's evolutionary stage. On the other hand, research is called for to analyse the relationship between development of the female entrepreneur's reachability and attendance at network events, and defining other factors not yet identified that affect female entrepreneur reachability in Middle Eastern societies.

With regard to the entrepreneurs' network development process, future research needs to take the changing model of the content of the network into account when the characteristics of the entrepreneurs' network structure are examined. Research needs to analyse carefully the most needed resources at each early development stage in order to predict, theoretically and strategically, how the entrepreneurs might configure,



manage and plan their network ties in ways which enables them to achieve more successful firm creation and growth.

## **9.6 Final word**

At the end of this illuminating journey of exploration of how female entrepreneurs in technology-based firms from one of the Middle Eastern societies develop their networks, I would like to emphasise the importance of this study at both theoretical and practical levels. Focusing on new Middle Eastern societies and comparing female entrepreneurs' networks in different sectors provide promising areas for research in the future with new findings that may take researchers by surprise. Personally and through this experience, I developed an initial understanding of some dimensions related to early creation and development of firms in the Jordanian context, particularly among female technology entrepreneurs and I would like to continue this enjoyable experience in my future career

## **Appendices:**

### **Appendix (A): Definition of high-technology enterprises**

Studies have followed two main approaches in defining high-technology firms including the business characteristics approach and industrial classification approach (Mason and Brown, 2012). The characteristics-based definition of high-technology firms is built on business characteristics (Glasson et al., 2006). These characteristics have been summarised in Glasson et al's (2006, p. 505) study as 'involvement in innovative activity, research and development intensive (R and D), high proportion of technology-oriented personnel, intensive use of technology, high technology content, leading-edge products or services'. Practically, this approach requires a huge amount of information about the firms in order to draw the boundaries of high technology activities and this is difficult to obtain (Mason and Brown, 2012). Alternatively, many studies have been undertaken in the USA and European countries using quantitative data to draw boundaries and identify a list of high-technology industries (Hecker, 2005). This industry classification approach is based on two main criteria, the degree of R and D intensity and technology-oriented employment (Hecker, 2005).

In 2002, and building on the data of the technology-oriented occupation, NAICS provided a list including 46 four-digit high-tech industries (Hecker, 2005). This list sets out three levels of high-tech industries (A full list of the NAICS is available in at the end of this section). Its 'projections for the 2002-12 period show high-tech employment continuing to grow particularly in the high-tech service-providing activities' (Hecker, 2005, p. 59). These activities include computer systems design and related services; management, scientific, technical and consulting services; management of companies and enterprises; software publishers; merchant wholesalers of professional and commercial equipment and supplies (including computers); data processing, hosting, and related services; wireless telecommunications carriers (except satellite); internet service providers and web search portals (Hecker 2005: 59). On the other hand, Glasson et al (2006:507) introduced a definition which includes both technology services and manufacturing activities. This definition builds on Butchart's

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definition and uses a range of SIC and non-SIC industries (Glasson et al., 2006). (A full list of the Glasson et al. (2006) high-tech industries is available at the end of this section).

As this research focuses on female technology-based firms in Jordan, it is important to adopt a definition offering a middle ground between the existing narrowest and widest definitions of high technology industries. This definition makes some adjustments to the existing definitions introduced by Glasson et al (2006) and based on the NAICS, to take into account the nature of the Jordanian economy and female technology entrepreneurship. Thus, the definition excludes some industries that are less prevalent or not appropriate in Jordan particularly among the Jordanian female technology entrepreneurs, such as automotive engineering; aerospace and related activities; and oil and gas extraction. Also, some industries have been added to capture the changes in technology as well as of the local circumstances of Jordanian female technology entrepreneurs.

The definition of technology-based enterprise adopted in this study uses an industry definition and includes both technology manufacturing and service activities. Technology manufacturing activities include energy, life science, medical equipment electronic publishing and computer equipment. Technology service activities include software development and consultancy, digital media, mobile application, web/internet service, architectural services, engineering consultancy, technical analysis and Scientific R&D services.

**Part one:** Glasson's et al (2006, p.507) 'high-tech industrial definition: Detailed sectors included in the Oxfordshire high-tech company database'.

### **High-tech manufacturing**

1. Electronic publishing (part of 1992 SIC category 22.1) (all other publishing activity is excluded)
2. Pharmaceuticals & medical diagnostics (1992 SIC category 24.4)
3. Biotechnology (no SIC category)
4. Composites & other advanced materials (no specific 1992 SIC category, although included in 25.24, 26.15 & 26.82)
5. Precision engineering & precision components (no specific 1992 SIC category, although included in 28.52)

6. Automated machinery & robotics (no specific 1992 SIC category, although included in 29.56 and other 29 codes)
7. Computer equipment & office machinery (1992 SIC categories 30.01 & 30.02)
8. Electrical equipment—selected (1992 SIC categories 31.1, 31.2 & 31.62)
9. Electronic equipment & components, communications equipment, and household TV, radio & audio equipment (1992 SIC categories 32.1, 32.2 & 32.3)
10. Medical & surgical equipment, precision instruments, process control equipment, optical instruments & photographic equipment (1992 SIC categories 33.1, 33.2, 33.3 & 33.4)
11. Motor sport & automotive engineering/design activities (no SIC category)
12. Aerospace & related activities (e.g. aircraft maintenance) (1992 SIC category 35.3)

**High-tech services**

1. Telecommunications (1992 SIC category 64.2)
2. Software development, consultancy & supply (1992 SIC category 72.2)
3. Web/internet services (no specific 1992 SIC category, but included in 72.6)
4. Other computer services (1992 SIC categories 72.1, 72.3, 72.4, 72.5 & 72.6)
5. R&D—natural sciences & engineering (1992 SIC category 73.1)
6. Architectural & engineering activities & related technical consultancy (1992 SIC category 74.2)
7. Technical testing & analysis (1992 SIC category 74.3)
- 8.

**Part two:** NAICS High-technology employment, 1992, 2002, and projected 2012.  
Source Hecker (2005:60-61)

NAICS Code	NAICS Industry
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**Level-I**

3254	Pharmaceutical and medicine manufacturing
3341	Computer and peripheral equipment manufacturing
3342	Communications equipment manufacturing
3344	Semiconductor and other electronic component manufacturing
3345	Navigational, measuring, electro-medical, and control instruments manufacturing
3364	Aerospace products and parts manufacturing
5112	Software publishers
5161	Internet publishing and broadcasting
5179	Other telecommunications
5181	Internet service providers and Web search
5182	Data processing, hosting, and related services
5413	Architectural, engineering, and related services
5415	Computer systems design and related services
5417	Scientific research-and-development services

**Level-II industries**

1131, 32	Forestry
2111	Oil and gas extraction
2211	Electric power generation, transmission, and distribution
3251	Basic chemical manufacturing
3252	Resin, synthetic rubber, and artificial synthetic fibres and filaments manufacturing
3332	Industrial machinery manufacturing
3333	Commercial and service industry machinery manufacturing
3343	Audio and video equipment manufacturing
3346	Manufacturing and reproducing, magnetic and optical media
4234	Professional and commercial equipment and supplies, merchant wholesalers
5416	Management, scientific, and technical consulting services
...	Federal Government, excluding Postal Service

**Level-III industries**

3241	Petroleum and coal products manufacturing
3253	Pesticide, fertilizer, and other agricultural chemical manufacturing
3255	Paint, coating, and adhesive manufacturing
3259	Other chemical product and preparation manufacturing
3336	Engine, turbine, and power transmission equipment manufacturing
3339	Other general-purpose machinery manufacturing
3353	Electrical equipment manufacturing
3369	Other transportation equipment manufacturing
4861	Pipeline transportation of crude oil
4862	Pipeline transportation of natural gas
4869	Other pipeline transportation
5171	Wired telecommunications carriers
5172	Wireless telecommunications carriers (except satellite)
5173	Telecommunications resellers
5174	Satellite telecommunications
5211	Monetary authorities, central bank
5232	Securities and commodity exchanges
5511	Management of companies and enterprises
5612	Facilities support services
8112	Electronic and precision equipment repair and maintenance.

(Glasson's et al (2006, p.507).

## **Appendix (B): Interview protocol**

### **Appendix (B): Interview protocol**

#### **Telephone screening questions**

Good morning (afternoon). I am calling ..... (*The female entrepreneurs name*)

My name is Wejdan Alakaleek

I'm a doctoral researcher at the University of Edinburgh Business School. I'm currently doing my doctoral research on female entrepreneurial technology ventures in Jordan and how they develop their network. I obtained your name as a woman who has a technology-based firm in Jordan from ..... (*The name of the avenue which it gave me the list either person or organisation*) and I hope to include your venture in this study. I have some short questions to ask you to explore the eligibility of your venture related to my study criteria?

#### **Venture owner, founder and manager**

- 1) Did you own 50 per cent or more of the business when you started out or after the start -up? (Yes, continue; No, not qualified)
- 2) Did you create this business or did you inherited/purchase it? (created, continue; inherited or purchased, not qualified)
- 3) Are you engaged in the venture's day-to-day management activities? (Yes, continue; No, not qualified).

#### **Venture development stage and technology sector:**

- 4) When did you start the venture?
- 5) Have you achieved the first sale of a commercial product or service? When was that?
- 6) Do you have employees? When was the first hire of a full-time employee?
- 7) What is your venture's main business?

#### **If the female entrepreneurial venture not qualified:**

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Thank you, I appreciate the time that you have spent to answer these question(s). Because the research is looking for ventures meeting specific criteria, your venture does not represent an appropriate fit with these criteria.

**If the female entrepreneurial venture qualified:**

Your venture appears as a good fit with the current research criteria, I would truly appreciate it if you would participate in this research by agreeing to be interviewed?

No. Thank you for your time. I appreciate your participation in answering these questions and wishing you all the best in your endeavour.

Yes, I truly appreciate that. In this research there will be two in-depth interview stages, each 1-1:30 hours in length. I will be contacting the ventures that are chosen for this research next week to arrange a convenient date and time to conduct these interviews.

**Appendix (B): Interview protocol**

**The research interview questions**

The following questions were used as a guide to the interview process

Stage one:

- Tell me about the source of your business idea
- Tell me about your business start-up process?
  - As necessary, this question is followed up by other questions until reaching the point that the female entrepreneurs have described who they approached for acquiring their start-up resources (financial, human and advices and help in legal, financial, product/service, market and business challenges).
- Is there a team?
  - Proceed with follow-up questions related to how they attracted them and how this team helped in connecting the female entrepreneurs with new contacts.
- Tell me about your firm after its start-up days?

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- Take notes about new connections. This question was followed by questions relating to the process of marketing, sales, business development and seeking investment
- Talk to me about how you would go about finding new resources and help.
  - As necessary, proceed with follow-up questions until reaching a point describing how easy it was to find sources for their required resources at the start-up stage and nowadays and whether their way of finding sources has changed.
- Tell me about the extent to which you are now introduced through someone else to new people or firms.
  - As necessary, proceed with follow-up questions until reaching a point describing how methods of introduction have changed through the course of their business journey and how these introductions were beneficial to their businesses.
- Tell me about the extent to which you have acted as a link between two other people or firms through your business journey?
  - As necessary, proceeds with follow-up questions until reaching the point describing how being introduced changed through their business journey and how these introductions were beneficial to their businesses.

### Stage two:

- Building upon our last discussion you mentioned different connections, tell me about which of these have been important to your business start-up and why.
  - Proceed with follow-up questions, as necessary, until reaching a point describing these connections; whether they are still important to her business; and whether there are new actors who have become important through her business life after the start-up.
- Talk to me about how you would describe your contacts when you started; did they include many different persons or did you depend on few persons?
- Tell me about your relationships with the firms and professionals in your industry.
  - Proceed with follow-up questions, as necessary, until reaching a point describing these relationships and how they were effective through the business journey.



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- Tell me about your previous relationships.
  - Proceed with follow-up questions, as necessary, until reaching a point describing these relationships and how they were effective through the business journey.
- Who, amongst your family and friends, have been most helpful somehow in your business?
  - Proceed with follow-up questions, as necessary, until reaching a point describing these members and how they were effective through the business journey.
- Tell me about your experience as a female technology entrepreneur in Jordan?
- Tell me about your participation in networking events either those held in Jordan or outside?
- Based upon our previous and today's discussions, I would like to summarise your business network through drawing a map of your network relationships.
  - Through interview, the researcher takes notes regarding the ties mentioned by the participant. Here a discussion ensues with the participant to place each connection on the hand written graph, according how she come to know this connection and how this tie helped her to build new connections.

**Appendix (B): Interview protocol**

**Interview consent form**

*Dear* .....

I am currently a doctoral researcher at the University of Edinburgh – UK, in the doctor of entrepreneurship and innovation programme in the Business School. I am conducting a research study of entrepreneurial technology ventures in Jordan entitled *Female technology entrepreneurial network development in Jordan*. This research has been designed to investigate how female technology entrepreneurs develop their networks to achieve an advantage in resource acquisition.

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We are pleased that your business has been chosen as a part of this important study focuses on the female entrepreneurial network in high technology-based entrepreneurial ventures. We are inviting you to participate in this research by taking part in an in-depth interview process.

This participation involves two interview stages, each 1-1:30 hours in length. The research interviews will include sets of open-ended questions focusing mainly on your experience in starting and developing your business and the development of your business network relationships in and outside in Jordan. Your interview will be recorded for research transcription purposes and to ensure accuracy.

**Participation and benefits:** Your participation will help to add value to the female entrepreneurship literature, in particular; it will help in developing a better understanding of the nature of the female technology entrepreneurial ventures in the Middle East. In addition, this participation will be important as the study focuses on explaining the process of female entrepreneurial network development in Jordan as a way of helping to find the most effective ways of engaging in the networking process. Upon request, you will receive a copy of the executive summary of the research results. Your participation in this research is voluntary. During the interview, you may choose to refuse to answer any question or withdraw from the interview at any time.

**Confidentiality and risk:** Your participation in this study has no foreseeable risks associated with it. All efforts will be taken to ensure the confidentiality of the data collected. Thus, your identity and those of your network ties will be confidential, will remain anonymous and will not be used in any published findings of this research. In addition, this research will use code-names for both yourself and those of your network relationships and the interview transcript and any other explanations of network ties (tables or diagrams) will use these code-names to ensure anonymity.

If you have any further questions, you may contact the principal researcher, Wejdan Alakaleek ([w.alakaleek@ed.ac.uk](mailto:w.alakaleek@ed.ac.uk)) at any time of this study You may also, contact directly the research supervisors, Dr. Sarah Cooper ([sarah.cooper@ed.ac.uk](mailto:sarah.cooper@ed.ac.uk)) and Dr.

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Adam Bock ([Adam.J.Bock@ed.ac.uk](mailto:Adam.J.Bock@ed.ac.uk)), from the Centre for Entrepreneurship Research, University of Edinburgh Business School.

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I have read the above and I understand the nature of the study.

I have received a copy of this interview consent form and I agree to give my permission to participate in this study.

.....

Signature

.....

Date of participant

**Appendix (C): Sample of the first, second-order analysis case analysis**

Reference: cross-cases analysis	First-order concepts	Second-order concepts	Aggregate dimensions
<p>&lt;Internals\Interview Transcript\F1&gt; - § 3 references coded</p> <p>Reference 1 ‘He is the one who helped me to develop the project and the idea’</p> <p>Reference 2 ‘He is the one who helped me, he with a company because he worked some parts outside his research lab and something in his research lab. So, he helped me to make the last stage of prototyping and make connection with some suppliers’</p> <p>Reference 3 ‘Those were the main players’</p> <p>&lt;Internals\Interview Transcript\F10&gt; - § 4 references coded</p> <p>Reference 1 ‘through their mentorship and guidance I changed the idea to...’</p> <p>Reference 2 ‘They make you to think bigger ... through their mentorship and guidance I changed the idea of the business’</p> <p>Reference 3 ‘I seek their help in business development’</p> <p>Reference 4 ‘Actually my main mentor is [X]’</p> <p>&lt;Internals\Interview Transcript\F2&gt; - § 4 references coded</p> <p>Reference 1 ‘he was like, um, was insisting to leave the job and start doing our own’</p> <p>Reference 2 ‘He expanded my mind and helped me to look at the bigger image of the business than I thought’</p> <p>Reference 3 ‘This event opened my eyes that I can start my own business ... it was magic for me and I started my business directly after this event’</p>	<p><b>Business impact</b></p>	<p><b>Quality of business interaction</b></p>	<p><b>Strength of ties</b></p>

<p>References 4                  ‘it’s all happen there, it was magic for me and I started my business directly after this event and people I met there support and encourage me and they got me clients, it was amazing’</p> <p><u>&lt;Internals\Interview Transcript\FE3&gt;</u> - § 3 references coded</p> <p>Reference 1                  ‘They gave me comments, we played around the business model a little bit to adjust it’</p> <p>Reference 2                  ‘He helped to put things into perspective’</p> <p>Reference 3                  ‘I talked to most people about different challenges, but who helped me to set my financial properly and to create a good financial business plan was [X]’</p> <p><u>&lt;Internals\Interview Transcript\F 4&gt;</u> - § 5 references coded</p> <p>Reference 1                  ‘People who were around me in the incubator at the beginning and especially the first two years of the business, that is very important and if I started the business out of the incubator, I might have closed. It is very important the environment around you’</p> <p>Reference 2                  ‘I would say the people at the incubator they had grateful, for me the management for the incubator had very good role in discussing some stuff and overcoming some challenges and all that’</p> <p>Reference 3                  ‘I would say there were three people who are important, I go back to the management of the incubator, it was ... and then I would say the consultant who helped in developing the business plan and that was ... and then or later on my partner or our partner, the last partner who is in the industry his name ...’</p> <p>Reference 4                  ‘I was introduced to [organisation X] by the business incubator that I was in and that kind of exposure meant a lot to the company’</p> <p>Reference 5                  ‘This was a turn-around for us ... and that was great thing for us’</p> <p><u>&lt;Internals\Interview Transcript\F5&gt;</u> - § 1 reference coded</p>			
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<p>Reference 1  ‘Yeah, ... he is the manager of our main customer, which is the [X] in Saudi Arabia’</p> <p>&lt;Internals\Interview Transcript\F6&gt; - § 5 references coded</p> <p>Reference 1  ‘The people who give us the more structure were [company X], it’s an accelerator based in Amman, by far, defiantly and we had mentors’</p> <p>Reference 2  ‘There were specifically two or three people that really were, I think, very important for us, to really develop it properly before we went for funding’</p> <p>Reference 3  ‘It’s kind of shifted, there was a very dramatic shift in the way that we think ... we started to think in a way we didn’t think before’</p> <p>Reference 4  ‘My husband is very important, again, with just helping me think kind of financially. um, I talk a lot with mothers, because I’m a mother and although there’re not business or social connections, they give me a lot of ideas, because they’re really our market, so, I feel like I’m always doing market research with them and teachers, they just give you much more idea about what the people wants and what the market wants’</p> <p>Reference 5  ‘[manager X] is a very important person to us’</p> <p>&lt;Internals\Interview Transcript\F7&gt; - § 2 references coded</p> <p>Reference 1  ‘The support that, I always accounted on them in the bank guarantees, because as a start-up company the banks will not give you bank guarantees to go through the project’</p> <p>Reference 2  ‘They are my bread and butter, they are my network ... without them I can’t work’</p> <p>&lt;Internals\Interview Transcript\F8&gt; - § 4 references coded</p> <p>Reference 1  ‘I would say those were more influential’</p>			
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<p>Reference 2 ‘One of our employees is very important ... I treat him like a business partner’</p> <p>Reference 3 ‘[X], no, [X] is very important since 2009, [X], yes, he helped me a lot’</p> <p>Reference 4 ‘He is, um, he comes after [her business partner] ... with important’</p> <p>&lt;Internals\Interview Transcript\F9&gt; - § 3 references coded</p> <p>Reference 1 ‘I needed his help’</p> <p>Reference 2 ‘I think [accelerator X] by far, very important ...’</p> <p>Reference 3 ‘They helped me to forward business relationships with their companies’</p> <p>&lt;Internals\Interview Transcript\F11&gt; - § 5 references coded</p> <p>Reference 1 ‘ب صراحه رالمست ثم هلا. ك. ثير دور لهم هم نعم’</p> <p>Reference 2 ‘اشياء ك. ثير اليا كان [X] هلا’</p> <p>Reference 3 ال لي input ال كان ال صدقاء هؤلاء من حد كل انه ال فكرة هلا؛ بعض مع وناقش advice ال ناخذف كنا، مخ تلف اي اها اعطانا ما ب حكوها ال لي advice ال ومرات، علية نمشي ك له مش بس ل شئ ن بهنا او جديدة فكرة ال نات فتح بس علبها نرد ‘جددي د’</p> <p>Reference 4 ل شركات content ب تزود ال لي شركة مع ب تعامل احنا م ثلا؛ ف بلشان، ال طيران شركات كل مع ب تعامل وهي، ال طيران معهم [Y] و صلونا هم وب عدين [X]</p> <p>References 5 [business company X] دور ب نكر وما جدا مهمة، [company X] اك يد كان حضرته ال لي boot camp ال خصوصا [Y] ال بزنس في ال مجالات من ل ك ثير و شامل م ف يد جدا</p> <p>&lt;Internals\Interview Transcript\F13&gt; - § 3 references coded</p> <p>Reference 1 ال لوحة لتعم لما هلا. ال فكرة انضج اساس على والر سامه شغل عندي انه حك ي تله، وب حك يله [X] ل لمنهدس رحتم</p>			
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<p>بذات فتح بذلك اذا فحكالي ، اطلعيهم ودي افكار وعندي شركة نفتح خذنا المشروع بهذا اساعدك بذلك اذا . شركة لوحة اول هلا . شركة على ف تفقنا وبينك بيني دائمة فيها اطور عقدت</p> <p>Reference 2 كانا شهر 8 او 7 فاول ، نادح خالص هيك وبعد شهر لمدة في هلا . مكان ولا مقر عندنا كان وما ال بيت من نشد تغل شاركت اذا انه ، لقرار اتخاذا عززت تانية شغلة خلاني ال لي ، ال لوحات معي وكان روح [exhibition X] [exhibition X] من رجعت ما بعد [exhibition X] let's start digital content ادكي 'ال شركة اسدنا م باشرة [X]</p> <p>Reference 3 تحت ضلي لا وحكالي شجوني ، شووحدك يته م باشرة [X] ، تقنعيهم صعب كما ال نشر دور وهلا ، ال نشر دور اذ تكار وحقق مم بيزك ثير عمل وهو ناشر على ادور وانا سده قعدت 'لدار خيال م بيعات</p> <p>&lt;Internals\Interview Transcript\F14&gt; - § 2 references coded</p> <p>Reference 1 افكار ، عند ال لي بال افكار غبورا ، غبوروني [company X] business side هم ف هلا technical كنت انال لانه business بال 'والا شدياء training ال خلال من طورا</p> <p>Reference 2 'اخرى وجهات اشخاص على عرف وني اك ثرناس هم [W] ، [company X] ، [business association Y] ب صنف انال</p>			
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