DYNAMICS OF SOCIAL NETWORKS AND GROWTH OF WOMEN-OWNED FIRMS IN ERITREA

***Abel Habtemariam Tedla*[1]**

ABSTRACT

This paper examines the dynamics of social networks and their impact on the growth of women-owned firms. Paired samples t-test on 372 firms in Eritrea show that social networks are more important in the early stages than in the later stages and the difference is significant at p = .001. Regression analysis also reveals that social networks have an impact on the growth of the firm with R^2 of .126 p < .001. From our empirical study, we provided evidence to the effect that the social networks ebb in importance along the business lifecycle. We also found that social networks contribute to growth. The study concludes that, the rate of dynamism of social networks depends on the socio-cultural factors and business context, which supports the feminist networking theories. In this regard, we extend the literature by arguing that firms' networks are evolutionary constructs which depend upon the firms' context.

Keywords: *Entrepreneurship, women-owned firms, social networks, dynamics, growth.*

INTRODUCTION

The Small and Medium Enterprises (SMEs) sector in Sub-Saharan Africa (SSA) plays a vital role in boosting GDP growth (Fjose *et al*., 2010). In fact, economic development would be expedited through the full participation of women, as they comprise over half of its population (Spring & Rutashobya, 2014). Consequently, the development of women entrepreneurs (WEs) has been one of the priorities in national development programmes and a number of interventions have been implemented targeting these WEs (Reynolds *et al*., 2004). However, the number of WEs remains far lower than that of men; they mainly engage in the service and trade sectors, and are less represented in sectors that demand professional skills (Fuente-Fuentes *et al*., 2015; O'Reilly and Hart, 2003). For instance, women account for 23% of the informal economy in Egypt to 82% in Tanzania (Spring & Rutashobya, 2014). Redressing such imbalance requires understanding the challenges of WEs.

[1] Abel Habtemariam Tedla : Lecturer, Eritrean Centre for Organizational Excellence, Eritrea (Email: abeltedla@gmail.com)

Business Management Review pp 24-44 ISSN 0856-2253

Generally, there are many obstacles limiting women's involvement in business. In addition to the less conducive business environment, women face a number of entrepreneurial challenges because of the patriarchal system that assigns women multiple gender-constructed roles, socio-cultural factors, restricted access to credit and relatively limited opportunities to create relations with the opposite gender (Kuada, 2009; MacDade & Spring 2005; Rutashobya *et al*., 2009; Spring & Rutashobya, 2014). This situation has made gender inequality a major constraint to fostering female entrepreneurship. Ultimately, this imbalance limits the socio-economic development of African countries primarily because their networks are embedded in social contexts characterised by restricted nature of socialisation, and encounter social structures in families, at work and social life that influence the development of social capital (Bridely, 2005; Nchimbi, 2003; Rutashobya *et al*., 2009). According to the feminist theory, women are marginalised groups and remain subordinate to men and have been largely ignored in entrepreneurship literature (Histrich & Peters, 2002). Thus, focusing on social networks of women entrepreneurs would provide additional insights into the existing body of knowledge.

Networking has long been recognised as a vital entrepreneurial skill for opportunity discovery and development of firms (Hampton *et al.,* 2009). Networks enable firms to foster their social capital[2] to take advantage of the existing opportunities and facilitate the exchange of resources (Jack *et al*., 2008; Rutashobya *et al*., 2009). According to Williamson's (1975) transaction cost approach, controlling both the demand and supply side of the network is essential for the realisation of a firms' growth. This is because no single firm possesses all inputs it needs in its operation. However, the effect of networks in a firm's growth in SAA remains largely unclear and where it has been studied the women entrepreneurship networks debate have remained less explored. What is known about entrepreneurial networks has been shaped by the perceptions and experiences of male entrepreneurs (Neergaard *et al*., 2005).

Although many studies exist on firms' networks related to growth (e.g. Allan, 2006; Jenssen & Greve, 2002; Laere & Heene, 2003; Rutashobya *et al*., 2009), the dynamics of networks over time remains an area that has yet to get adequate attention in literature (Hampton *et al*., 2009; Peltier & Naidu, 2012). Most of the studies on network dynamics of firms, which are mainly conducted in the developed countries, indicate the need for change of networks across the business lifecycle (Elfring & Hulsink, 2007; Klyver, 2008; Xu *et al*., 2008; Hite, 2005; Jack *et al*., 2008; Peltier & Naidu, 2012). At the start-up stage, social networks are important even as organisational networks grow at later stages (Greve & Salaff, 2003; Lechner & Dowling, 2003). Peltier and Naidu (2012) also argue that small business owners cannot adhere to the status quo before finding their

[2] Social capital is quality created between people, human capital is quality of individuals (Burt, 1997)

bearings in earnest. They start with the social networks in the early stages and change over time (Greve & Salaff, 2003).

Although these studies provide a grounded insight on network dynamics in general, there is lack of critical assessment on how the rate of change of networks is affected by a given firm's context. The studies assume that at the early stages social networks are important and at a later stages the organisational networks become more important, thus paying less attention to the context of women entrepreneurs, which might affect the rate of dynamism of their networks. Moreover, most of the studies (e.g., Lechner & Dowling, 2003; Peltier & Naidu, 2012) assess dynamism at two stages of the business mentioned here. However, making such assessment at three stages of the business might also provide additional insights into the nature of the dynamics of social networks, hence this study.

Accordingly, the major research question of the study was: "Do social networks of women-owned businesses change with firm's lifecycle and do they have an impact on growth?" This study contributes to literature in three major areas. First, it provides additional insight into the dynamics of social networks of women-owned firms. Second, it deepens our understanding on the effect of networks on the growth of women-owned firms. Third, it reinforces our understanding on the probable role of socio-cultural factors in fostering the networks of women-owned firms. The paper is organised into four sections. First, it examines previous literature in the dynamics of networks of women-owned firms and their relations to the growth of the business and defines our research hypothesis. Then, it presents the methodology used in this study. Finally, the paper concludes by discussing the findings and outlining future research.

THEORETICAL FRAMEWORK

Theoretical Background

The term "network" is defined differently in various disciplines (O'Donnell *et al*., 2001). It was first developed in sociology and then applied in organisational behaviour and entrepreneurship research (Aldrich & Zimmer, 1986). Johannisson (1986) defines networks as entrepreneurs' personal relationships with external and/or internal actors such as individuals or organisations. Similarly, Ford *et al*. (1998) define networks as long-term social and economic relationships that a firm has with its stakeholders. Despite their being varied in definitions of networks, most of them fall into two groups: personal/social and inter-organisational (O'Donnell *et al*., 2001).

Scholars have described two major dimensions of networks: the relational and structural dimensions. Johannisson (1995) describes relational dimension as

social, communication and exchange networks. The social networks represent relationships with family members, relatives, friends and acquaintances (Johannison, 1986; O'Donnel *et al*., 2001; Premaratne, 2001). Communication or support networks represent relationships with financial institutions, associations, non-governmental organisations (NGOs) and government organisations (Klyver, 2008; Palakshappa & Gordon, 2007; Premaratne, 2001) whereas the exchange or inter-firm network represents relationships with suppliers and customers (Peltier and Naidu, 2012; Premaratne, 2001). The focus of this paper is on social networks. It takes cognisance of the fact that structural networks represent the strength of network ties, size of network, density of networks and diversity of networks (Carson & Gilmore, 2004; Rutashobya *et al*., 2009).

Early researchers frequently used Mitchell's (1969) conceptualisation of social networks that considers structure and process. Indeed, Mitchell (1969) describes his network dimensions as comprising the structure of the network and interaction dimensions (O'Donnel *et al*., 2001). The structural dimensions are described as anchorage (personal or inter-organisational relationships), density (measure extent of connectedness of actors), reachability (ease of contact of actors) and range (heterogeneity of actors in the network) (O'Donnel *et al*., 2001). Mitchell's interactional dimensions also encompasses the content (meaning actors attach to the relationship), intensity (extent actors stay in the relations), frequency (number of times actors spend in the relationships), durability (how far the relationship lasts) and direction (orientation of the relationship) (O'Donnel *et al*., 2001). This study focuses on three of Mitchell's dimensions—anchorage, content and frequency.

The idea of networks emanates from scholars' argument on how transactions occur in the market and how firms acquire resources to enhance competitiveness (O'Donnell *et al*., 2001). Whereas classical economists focused on market structure, the neo-classical economists focused on firm's hierarchy (Eccles, 1981; Williamson, 1975). Later, Granovetter (1985) argued that economic behaviours are embedded in the network of relations rather than rationality and self-interest alone. This contention led Williamson (1991) to propose that in addition to the market and firms' hierarchy, the alternative approach for firms is to operate in inter-organisational networks. Networks enable firms to exploit the existing opportunities and exchange of resources (Jack *et al*., 2008; Rutashobya *et al*., 2009) because there is no firm that possesses all inputs it needs for its operation (Hakansson & Johanson, 1988). As a result, the firms' growth has tended to depend on the networks they have with their environment. The importance of networks becomes even more apparent in an uncertain environment which is the case of emerging economies (Mbura, 2007). In this regard, understanding firms' networks becomes a vital issue in enterprise development.

Social Networking and Feminist Theories

The key concept under the social networking approach is that a network is a relationship between two people and the unit of analysis is the entrepreneur (Aldrich & Zimmer, 1986; Birley, 1985). The model has a socio-economic perspective and assumes the problem to be lack of resources, which emanates from the smallness of SMEs (Birley, 1985). SMEs in the African context also share these characteristics. The creation of such networks enhances the exchange of information, goods and services (Birley, 1985). The social network theory has been applied to show that social networks allow for access to resources not available in the firm, and to demonstrate that networks enhance economic exchange (Anderson *et al.*, 2002). For instance, family and friends provide business ideas that are essential to the development of SMEs (Kenpster & Cope, 2010). According to feminist theories, social experiences of men and women are different (Babbie, 1995) and their networking behaviour is influenced by their socially-constructed gender roles (Nchimbi, 2003). The feminist theories look at networks of women entrepreneurs by taking into account the roles they play in society. Such a perspective provides insight into the influence of patriarchal systems and social structures on networks of women entrepreneurs, which is the case in SSA. Thus, this paper, which is based on the social network model and feminist theories, examines the dynamism of social networks of women entrepreneurs taking into account their roles in the society.

Networks of Women Entrepreneurs

A number of studies have investigated the characteristics of networks of WEs. MacDade and Spring (2005) indicate that WE networks spun across kinship and ethnic groups and women form 23% of total network members. This social experience is determined by the socio-cultural context in which they operate. In patriarchal societies, WEs have limits in creating networks with actors in their environments and in taking advantage of existing opportunities. Their network is influenced by the culture of their respective society. For instance, in certain cultures women's interaction with men is prohibited as it is considered to be outside socially-acceptable norms of those societies. The situation becomes different in other cultures and economies. For instance, Neergaard *et al.* (2005) argue that women are more likely to reach out to men for support as men are perceived as higher-status individuals. Similarly, Rutashobya *et al*. (2009) found that women entrepreneurs' strong ties tend to be more with men than with women. Thus, it can be noted that socio-cultural factors impact on network creation and WEs have more of social networks. Although a number of studies on entrepreneurial networks exist, little empirical studies specifically on women's networks exist. Rutashobya *et al.* (2009) indicate that issues of women's network composition as related to entrepreneurial outcomes are less researched. Similarly, Brindley (2005), Martin *et al.* (2005) and Neergaard *et al*. (2005) indicate that little research has been done on entrepreneurship gender research in small businesses. Indeed, a substantial body of academic work with

supportive empirical material focusing on women entrepreneurs' networks in developing countries remains largely absent.

Empirical Review

Empirical studies by Premaratne (2001) and Lechner and Dowling (2003) found that at the early stage of the firm's lifecycle, social networks are very important to build a foundation for the start-up. Similarly, Hite and Hesterly (2001) indicate that emerging firms rely more on personal networks early in their business lifecycle than on other aspects. At this stage, the entrepreneur needs ideas to identify opportunities, information, initial capital, and encouragement (Birley, 1985; Butler & Hansen, 1991). This is partly explained by the higher level of trust that exists among network partners (Mackinnon *et al*., 2004).

Later when the firm progresses into a growth mode and beyond, the other (exchange and communication) networks gain momentum as firms seek new partners that can offer the start-up more opportunities (Hite and Hesterly, 2001). Thus, the network mix changes along the business lifecycle with the relative importance of social networks ebbing over time in favour of the inter-organisational networks (Lechner and Dowling, 2003). Some studies on network dynamics indicate that small firm networks must change across the business life cycle (Peltier and Naidu, 2012; Hampton *et al*., 2009). Others note the importance of social networks at the start-up stage and other networks growing over time (Greve and Salaff, 2003; Hite and Hesterly, 2001). From this empirical evidence, we posited the following hypotheses: i) H1: *Social networks are more frequent at the prestart-up stage than at the later stages*; ii) H2: *Social networks are more important at the prestart-up stage than at the later stages*.

Most of the studies on the impact of networks on entrepreneurial outcome (Allan, 2006; Jenssen & Greve, 2002; Kuada, 2009; Mbura, 2007; Rutashobya *et al*., 2009) are based on the network success hypothesis, which assumes that a firm's network is positively related to success (Witt, 2004). Jenssen and Greve (2002) and Rutashobya *et al*. (2009) indicate that a firm's performance is affected by network type (social, communication and exchange) and network structure (strength of ties, size, heterogeneity). On the other hand, Kuada (2009) argues on the downside effect of social networks, indicating that strong social relations can be potential barriers to growth. Thus, our hypothesis on the relationship of social networks on growth is H3: *The social networks are positively related to the growth of the firm*.

Figure 1 depicts the conceptual framework developed from literature linking business stages and social networks related to the growth of the firm. The conceptual framework shows that the social networks change with the lifecycle of the business. It indicates that the stage of the business determines the proportion of social networks of the business and the social networks have an impact on the growth of women-owned firms.

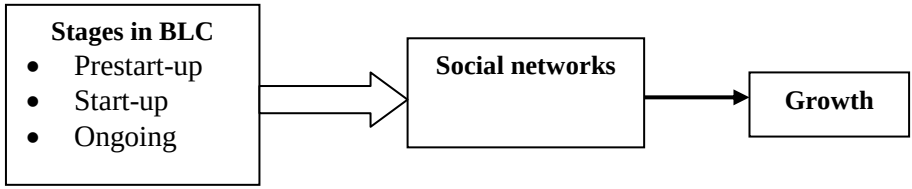


Fig 1: BLC stages, social networks and growth

METHODOLOGY

The overall objective of this study was to examine the dynamics of social networks of women-owned firms in Eritrea. Accordingly, the social networks have been compared using the three business stages. The research was mainly explanatory whereby the hypotheses derived from empirical studies were tested. The research strategy was mainly a survey that used a questionnaire to collect data supplemented by case studies. The cross-sectional design was applied at one point to collect data in the three stages from the women entrepreneurs.

The source of data for this study was mainly a survey conducted[3] on a sample of 372 women- owned SMEs in Eritrea to examine the 'Network Dynamics and Growth of Women-Owned Firms in Eritrea'. The sample design was single-stage stratified probabilistic design whereby women-owned enterprises were the sampling units. A list of women-owned business enterprises in five towns, stratified by type and year of establishments, was taken as a sampling frame to select the sample business enterprises. Only women entrepreneurs in the formal SME sector were taken from four regions, namely, the Central, Southern, Anseba and Gash Barka. The Northern and Southern Red Sea regions were not included in this study because the number of SMEs in these regions is insignificant (MTI, 2013). Moreover, to capture data in all the three stages, only firms that had been in operation for at least three years were drafted into the sample. The analysis was limited to egocentric networks whereby women entrepreneurs provided information on the nature of their networks. The sample size was determined on the basis of level of precision of 5% for the estimates for all the towns combined together with confidence level of 95%. The overall sample size was allocated proportionally among the regions. To ensure statistical generalisation, probability sampling techniques were used (Saunders *et al*., 2012). Sample women entrepreneurs were selected using stratified Systematic Random Sampling (SRS). Exploratory data analysis was conducted to have an understanding of the nature of our data. This was essential to identify elements that could bias the analysis such outliers and violations of model assumptions. SPSS version 20 was used to analyse survey data. The paired-samples t-test was used to compare means of

[3] Data has been collected from Dec 2013 – Apr 2014 which is part of the PhD study of the first author

variables collected in two different situations but from the same participants at different stages of the business. Comparing differences between two means can be conceptualised as predicting an outcome based on a categorical predictor that can be thought of being included in a linear model (Cohen, 1968). Hence, it can be deduced as a regression model with one dichotomous predictor. In our case, frequency/importance of social networks is being predicted based on the stage of development of the business (prestart-up, start-up and on-going). The value of b in the linear model represents difference between means of social network at different stages i.e. $\bar{X}prestartup - \bar{X}startup$or $\bar{X}startup - \bar{X}ongoing$ (Field, 2013).

Cohen's d was used to measure the effect of size, which represents the percentage deviation of the mean from the base category (Cohen, 1968). Throughout the discussion thresholds of d = 0.2 (small), 0.5 (medium) and 0.8 (large) were used as suggested by Cohen (1968). To validate hypothesis 1 and 2 the paired-samples t-test were used. The main variables used in this analysis were: i) frequency of social networks at three stages (SON_1freq, SON_2freq and SON_3freq); ii) Importance of social networks at three stages (SON_1Imp, SON_2Imp and SON_3Imp); and iii) the growth of firms. For hypothesis 3 linear regression analyses was used to examine the relationship between social networks and the growth of firms.

MEASUREMENT OF VARIABLES

In this study, the relational networks have been conceptualised as personal, communication and exchange networks (Johannisson, 1995). The focus of this study was on the social/personal networks. The social networks have been measured in terms of the frequency and importance of the women entrepreneurs' contact with family members, relatives, friends and acquaintances (Johannisson, 1995). Dynamics of networks along the BLC have generally been studied using the two-stage model (Peltier & Naidu, 2012) and three-stage model (Greve & Salaff, 2003; Jack *et al*., 2008). To have a better understanding of the dynamics of social networks, the study adopted the three-stage BLC model (Butler & Hansen, 1991). In the three-stage model, the prestart-up represents the period before the firm starts operation, start-up represents the early period after the firm starts operation (the first two years in this study) and the ongoing stage represents subsequent take-off and growth. Growth was measured by the change in the number of employees from the start to the current period (Ferreira *et al*., 2011, Witt, 2004). Change in the number of employees was used to measure growth because it is more objective and widely used measures (Zhao, Frese & Giardini, 2010). In this study, our independent variable was the social networks and our dependent variable was growth. With the objective of reducing the potential confounding effect of certain factors, firm-related factors such as size, age of firm, and entrepreneur-related attributes such as age, marital status and education have been controlled.

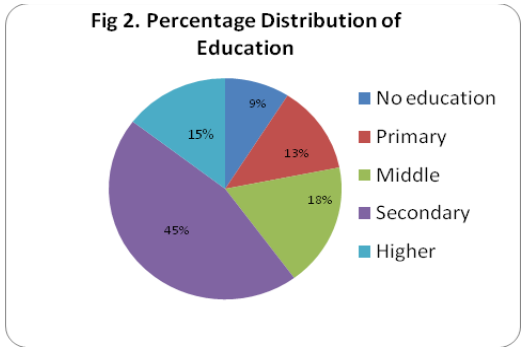
SAMPLE DESCRIPTION

This section presents women entrepreneurs' characteristics such as age, marital status and level of education. These characteristics enabled us to have a better understanding of the nature of networks in relation to the characteristics of the entrepreneur. Table 1 shows that about 76% of women entrepreneurs are within the 30-59 age group, 12% fall into the below 30 age group and 12% fall into above 60 years the age group. On average, women entrepreneurs in Eritrea who took part in this study are aged 44 years old compared to 39 in Premaratne's (2001) study. Similarly, Table 1 shows that about 71% of women entrepreneurs are married, which is slightly higher than the survey results of the National Statistics Office (NSO) of 56% (EPHS, 2010). Culturally, this marital status limits the women's opportunity to create networks with actors in their environment. Those that have never been married (12.6%), or widowed/divorced/separated (16.6%) have better a chance of creating such networks. Our findings for the never married category are slightly lower (13%) than the NSO data which registered 23%. However, with the third category the findings are similar (18%).

Table 1: Respondents by age & marital status

Age			Marital Status		
Age Group	**Number**	**Valid %**	**Marital status**	**Number**	**Valid %**
<30	43	12.1	Never married	45	12.6
30-39	101	28.4	Married	252	70.8
40-49	105	29.5	Widowed	16	4.5
50-59	66	18.5	Divorced	26	7.3
60+	41	11.5	Separated	17	4.8
Total	**356**	100.0	**Total**	**356**	**100.0**

Source: Field Data (2014)



With regard to the level of education, Fig 2 shows that about 60% of the women entrepreneurs have attended secondary and higher level education, 31% have either attended primary or middle level education and the remaining 9% have no formal education as compared to 2% in Premaratne (2001) study. This proportion is on the high side considering the overall level of education of women in

the country. About 22% of all women in the age group of 15-49 attended secondary education and higher (EPHS, 2010).

However, this is not a surprise because women entrepreneurs in the formal SMEs sector mainly operate in the main cities (from which the sample has been mainly drawn) where they have better access to education than in the rural areas.

FINDINGS AND DISCUSSION

Dynamics of Social Networks

To test H1, the frequency of contact of social in the three stages was compared. The bootstrap paired-samples t-test between frequency of contact with social networks at prestart-up stage (SON_1freq)[4] and start-up stage (SON_2freq**)** produced results indicated in tables 2a-c. Table 2a reveals that at prestart-up stage, on average the frequency of contact with social network actors is more (M = 3.90, SE = 0.04) than the frequency of contact at start-up stage (M = 3.53, SE = 0.04)

Tables 2a: Paired Samples Statistics

Frequency of contact with social network actors at		Statistic	Bootstrap[a]			
			Bias	Std. Error	BCa 95% Confidence Interval	
					Lower	Upper
Start-up stage	Mean	3.5299	.0012	.0371	3.4526	3.6058
	N	685				
	Std. Deviation	1.01785	.00013	.01983	.97617	1.05985
	Std. Error Mean	.03889				
Prestart-up stage	Mean	3.9036	-.0014	.0380	3.8321	3.9737
	N	685				
	Std. Deviation	.98797	-.00100	.02189	.94472	1.02966
	Std. Error Mean	.03775				

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Source: Field Data (2014)

Similarly, Table 2b shows that there is only 0.1% chance that a value of t at least -8.121 could occur if the Ho were true. Thus, there is a significant difference between the frequency of contact of social networks at prestart-up stage and

[4] SON_1freq designates = social networks frequency at prestart-up stage and SON_2freq at start-up stage

start-up stage. This difference, -0.37, BCa 95% CI [-0.47, -0.28], is significant *t* (684) = -8.121, *p* = .001, as indicated in Table2b and represents a medium-sized effect, d^5 = 0.37. This implies that the mean of frequency of contact of social network at start-up stage is lower by 0.37 standard deviations than the mean of frequency of contact at prestart-up stage. Therefore, the difference is statistically significant but of small/medium sized change. Moreover, Table 2b indicates that in 95% of the samples the interval [-0.47, -0.28] contains the true value of the mean difference -0.37. This interval doesn't contain zero which implies that the true value of the mean difference is unlikely to be zero. In other words, there is a difference in the population showing higher frequency of contact with social networks at prestart-up than at start-up stage. Thus, the frequency of contact of the social network actors at the start-up stage has significantly declined than the prestart-up stage.

Tables 2b: Paired Samples Test& Bootstrap for Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
Frequency of contact with social network actors at	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Start-up & prestart-up stages	-.37372	1.20448	.04602	-.46408	-.28336	-8.121	284	.000

		Bootstrap[a]				
					BCa 95% Confidence Interval	
Frequency of contact with social network actors at	Mean	Bias	Std. Error	Sig. (2-tailed)	Lower	Upper
Start-up & prestart-up stages	-.37372	.00263	.04595	.001	-.46662	-.27737

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Similarly, the comparison of the frequency of contact of social networks at start-up and ongoing stages of the business (SON_2freq/SON_3freq) indicates that the average frequency of contact of social network in the two stages is similar at 3.54. Therefore, the frequency of contact of social networks has significantly decreased from prestart-up to start-up stage, which supports our hypothesis H1 whereas the decline from start-up to ongoing was not significant. This corroborates with the findings of Peltier and Naidu (2012) though in their case the difference was not significant. To validate H2, the importance of social networks at the different stages of the business was compared.

Comparison of the importance of linkage with social networks at prestart-up and at start-up stages of the business (SON_1Imp/SON_2Imp) produced results as presented in Table 3. At prestart-up stage, on average the importance of contact

[5] $d = (\overline{X}prestartup - \overline{X}startup)/\sigma_{prestartup}$

with social network actors is more (M = 3.93, SE = 0.04) than the importance of contact at the start-up stage (M = 3.57, SE = 0.04). This difference, 0.37, BCa 95% CI [0.28, 0.45], is significant t (684) = 8.48, p = .001, and represents a medium-sized effect, d = 0.41. This implies that the mean importance of contact at start-up stage is lower by 0.41 standard deviations than the mean importance of contact at the prestart-up stage. Therefore, as well as being statistically significant, the difference is a medium sized change. Moreover, Table 3 indicates that in 95% of the samples the interval [.28, .45] contains the true value of the mean difference 0.37. This interval does not contain zero which implies that the true value of the mean difference is unlikely to be zero. In other words, there is a difference in the population showing higher importance of contact with social networks at the prestart-up stage than the start-up stage. Therefore, at the prestart-up stage of the business the social networks are more important than at the start-up stage which supports our hypothesis H2. Our findings corroborate with Peltier and Naidu's (2012) study which also found a significant difference in the value of social networks.

Tables 3:Bootstrap for Paired Samples Test

Level of importance of social network actors at	Mean	Bootstrap[a]				
		Bias	Std. Error	Sig. (2-tailed)	BCa 95% Confidence Interval	
					Lower	Upper
Prestart-up and start-up stages	.36642	.00198	.04236	.001	.28321	.45401
a.Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples						

Comparison of the importance of linkage with social networks at start-up and ongoing stages of the business (SON_2Imp/ SON_3Imp) shows that at the start-up stage, on average the importance of contact with social network actors is slightly more (M = 3.57, SE = 0.03) than importance of contact at ongoing stage (M = 3.55, SE = 0.03). This difference, -0.02, BCa 95% CI [-0.09, 0.05], is not significant t (896) = -0.692, p = .555. Therefore, the importance of social networks significantly drops as we move from prestart-up to start-up whereas the decline from start-up to ongoing stage was not significant. Although there was a decline in the importance of social network, the rate of decline was not significant. This might be partly because the business environment was not supportive for women entrepreneurs to transition to the other networks and the influence of socio-cultural factors.

A summary of the dynamics of social networks in the three stages is presented in Table 4, which reveals that the frequency and value of contact with the social networks at the prestart-up stage is significantly higher than at the start-up stage. However, the frequency and value of contact at the start-up stage is not significantly more than the ongoing stage. This reveals that the social networks

reduce momentum in terms of frequency of contact as well as their value as the business moves along its BLC.

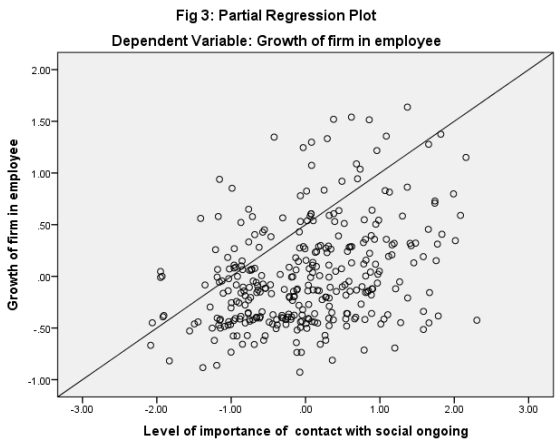
Table 4: Dynamism of networks along BLC

Compared variables	Result	Mean Difference	
		Statistical Significance	Change Size
SON_1freq/SON_2freq	SON_1freq >SON_2freq	Significant	Medium
SON_2freq/SON_3freq	SON_2freq > SON_3freq	Not significant	---
SON_1Imp/SON_2Imp	SON_1Imp>SON_2Imp	Significant	Medium
SON_2Imp/SON_3Imp	SON_2Imp > SON_3Imp	Not significant	---

Source: Author's survey, 2014

Impact of Networks on Growth

In H3, our outcome variable was growth and the predictor variable was SON_3Imp. Before running the regression model, initial assessment was made to check the linearity assumption and outliers. Then the model was run to determine its parameters and level of fitness followed by model diagnosis, to determine the stability of the model and existence of influential cases.



An initial check was done using scatter-plot to assess conformity of linearity assumption and the existence of outliers. The aim was to ensure that the outcome variable (firm's growth in number of employees) is linearly related to the predictor variables (SON_3Imp). The resulting scatter-plot is presented in Fig 3. The scatter plot shows that the predictor variable (SON_3Imp) has linear relationship with the outcome variable (Growth). Thus, the linearity assumption is tenable.

It was also important to reduce the potential confounding effect of the control variables, namely, firm size, age of firm, entrepreneur age, marital status and

education. The sample size in this study is large and normality assumption is not of great concern because of the CLT (Field Data, 2013). Hence, the Pearson's correlation coefficient between our control and independent variables was determined as indicated in Table 5:

Table 5. Correlations

		Social network	Entrepreneur Age	Marital status	Education	Firm age	Firm size
Social network	Pearson Correlation	1	**.086**	**.018**	**-.104***	**.025**	**-.021**
	Sig. (2-tailed)		.107	.740	.050	.648	.703
	N	356	356	356	356	344	338
Entrepreneur Age	Pearson Correlation	.086	1	.304**	-.465**	.499**	.218**
	Sig. (2-tailed)	.107		.000	.000	.000	.000
	N	356	356	356	356	344	338
Marital status	Pearson Correlation	.018	.304**	1	-.348**	.236**	-.043
	Sig. (2-tailed)	.740	.000		.000	.000	.431
	N	356	356	356	356	344	338
Education	Pearson Correlation	-.104*	-.465**	-.348**	1	-.352**	-.135*
	Sig. (2-tailed)	.050	.000	.000		.000	.013
	N	356	356	356	356	344	338
Firm age	Pearson Correlation	.025	.499**	.236**	-.352**	1	.210**
	Sig. (2-tailed)	.648	.000	.000	.000		.000
	N	344	344	344	344	344	327
Firm size	Pearson Correlation	-.021	.218**	-.043	-.135*	.210**	1
	Sig. (2-tailed)	.703	.000	.431	.013	.000	
	N	338	338	338	338	327	338

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

The correlation between social networks and the control variables is not significant with the exception of education (r=-.104, p = 0.05) which is also small according to Field's (2013) criteria. Thus they have less confounding effect on the relationship of growth and social networks. Linear regression was run to determine the relationship between the importance of social networks and the growth of the firm. Table 6a indicates that the value of R is .355 which is the Pearson's correlation between growth and importance of social networks. The value of R^2 is .126, which implies that social networks account for 12.6% of variations of growth. The remaining 87.4% are explained by other variables.

Table 6a: Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	

					ge					
1	.355[a]	.126	.123	.46341	.126	45.981	1	319	.000	
2	.363[b]	.132	.115	.46559	.006	.403	5	314	.847	1.651

a. Predictors: (Constant), Level of importance of contact with social ongoing
b. Predictors: (Constant), Level of importance of contact with social ongoing, marital status, firm size, firm age, education, entrepreneur Age
c. Dependent Variable: Growth of firm in employee

Similarly, Table 6b shows ANOVA test, where the value of F is 45.981, which is significant at $p < .001$. This indicates that there is less than 0.1% chance that F = 45.981would happen if the null hypothesis were true. Therefore, we can conclude that our regression model results in significantly better prediction of growth than if we had used the mean value of growth. Thus, our regression model is significantly good predictor of growth.

Table 6b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.874	1	9.874	45.981	.000[b]
	Residual	68.504	319	.215		
	Total	78.378	320			
2	Regression	10.311	6	1.718	7.927	.000[c]
	Residual	68.068	314	.217		
	Total	78.378	320			

a. Dependent Variable: Growth of firm in employee
b. Predictors: (Constant), Level of importance of contact with social ongoing
c. Predictors: (Constant), Level of importance of contact with social ongoing, marital status, firm size, firm age, education, entrepreneur Age

Table 6c shows the contribution of the importance of social networks in predicting the growth of the firm. The value of b_0 is 1.06 which indicates the level of growth without the effect of social network. The value of b_1 is 0.194 which indicates the change of growth associated with a unit change in the importance of social networks. The significance is less than .05 showing that the result reflects a genuine effect. For both t*s*, the probabilities are given as .000 showing that the probability of these t values (or larger) occurring if the values of b in the population were zero is less than .001. Thus, the coefficients are significantly different from 0. This implies that importance of social network makes a significant contribution ($p < .001$) to predicting growth. Our findings corroborate with Peltier and Naidu (2012) who found that having social identity whether personal or external leads to superior performance. Moreover, Table 6c shows that the contribution of our control variables to growth is not significant.

Table 6c: Coefficients[a]

Model		Unstandardised Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.025	.063		16.241	.000
	Importance of social network	.196	.029	.355	6.781	.000
2	(Constant)	1.056	.229		4.615	.000
	Importance of social network	.194	.029	.352	6.624	.000
	Entrepreneur Age	.002	.003	.049	.743	.458
	Marital status	-.050	.052	-.055	-.963	.337
	Education	.004	.027	.009	.149	.881
	Firm age	-.003	.004	-.048	-.788	.431
	Firm size	.001	.017	.004	.080	.936

a. Dependent Variable: Growth of firm in employee

To determine whether our model is affected by small number of cases and verify that it is generalisable to other samples, model diagnosis was undertaken. Field Data (2013) indicates that cases whose |Std Residual|>3.29 are cases of concern. All values were below the threshold and, accordingly, no case seems to be of great concern. According to the second criteria, if 1% of sample cases have |Std Residual|>2.58 then the model has unacceptable level of error. In our case, three cases have |Std Residual|>2.58 which is 1.5% (5/321) of our sample which is slightly more than the threshold. The third criteria indicates that if 5% of cases have |Std Residual|>1.96 the model is poor representation of data. In our case, the value was 4.4% which is less than the limit of 5% indicating that our model is a fair representation of our data. To identify problematic cases, a case summary was produced. Cook and Weisberg (1982) indicate that when the Cook's distance is greater than 1 then it may be a cause for concern. None of the cases in this study had a Cook's distance greater than 1. Similarly, the average leverage for our model is 2/321 = 0.006[6]. Only case 84 was above three times larger the average leverage value of 0.018. Thus, none of the cases has an undue influence in our model. Moreover, we determined the Mahalanobis distance which measures distance of cases from the mean of the predictor variables (Field, 2013). With one predictor a distance of above 3.84 (p=.05) or 6.63 (p=.01) is a cause for concern. Six cases had values of above 3.84 and the max value was 6.19. However, as their Cook's distance was less than 1 there was no need to delete the cases because they do not have a large effect on the regression analysis (Stevens, 2002). Thus, it can be fairly concluded that our cases do not exert undue influence over our model.

[6] Leverage = (k+1)/n, where k is the number of predictors and n is the number of cases

To make fair judgement of the stability of our model, the influence of cases was also assessed using the DFBeta statistics. An absolute value greater than 1 is a problem (Field Data, 2013). In our study, for all the cases the |Stand DFBETA| was less than 1, showing that our cases are not substantially influencing the model parameter. Similarly, if a case is not influential then its Standardised DFFIT should be near to zero (Field, 2013). In our study, only one case had a value of 0.2 and the rest had STANDFFIT < 0.2. Another measure of case influence on the regression parameters is the covariance ratio (CVR). Field (2013) indicates that CVR close to 1 is an indication of very little influence. In this study all the cases had a CVR value close to 1. Thus, it can be concluded that our model is less affected by small number of cases and fairly generalises to other samples.

Conclusions, Implications and Future Research

The findings shed light on the dynamics of social networks of women entrepreneurs. It shows that the social networks at the start-up and ongoing stages tend to decline compared to their prestart-up stages. However, the decline of the frequency and value of contact of the social networks from start-up to ongoing stage was not significant. This indicates that although our findings corroborate with previous studies, the declining rate of dynamism of networks in the later stages might suggest the influence of the socio-cultural and business context of women entrepreneurs. In an environment where the business climate is not conducive, and women experience pressure from socio-cultural factors, the rate of dynamism of social networks might be relatively lower than an environment with a better business climate. It has also been established that, the value of social networks of women entrepreneurs has a significant effect on the growth of the firm. This highlights the need to strengthen the networks and reduce the barriers that limit their development through different programmes aimed at enhancing networks of women entrepreneurs and their growth. In this regard, concerted efforts of all stakeholders such as governmental institutions, associations, financial institutions and NGOs are crucial.

Results in this study have practical implications. This empirical evidence indicates that harnessing the social networks is essential for the development of WEs. This requires addressing challenges related to the women entrepreneurs and the socio-cultural factors which limit their development. The findings in this study have managerial and practical implications for women entrepreneurs, and policy-makers. The study has established a significant relationship between social networks and growth of women-owned firms. Moreover, the case study has also identified the following barriers to networking of WEs: limited networking capability, limited knowledge of network benefits and sources of networks. Thus, to take advantage of the existing opportunities, WEs need to develop their networking capabilities through training and participation in different business forums. This study focused on the dynamics of egocentric

networks and its influence on the growth of firms. The scope of the study was limited to some of the network dimensions. Furthermore, the study design was cross-sectional, focusing as it does only on women entrepreneurs in the formal sector. These limitations call for further research on the dynamics of firm's networks to have a better understanding of the behaviour of the dynamics and its impact on growth.

Acknowledgements
This study is part of my PhD thesis at the UDBS. I would like to express my appreciation to my supervisor, Prof. Lettice K. Rutashobya, for her continuous guidance.

References

Aldrich, H., & Zimmer, C. (1986). Entrepreneurship through social networks. In Sexton, D. L. and Smilor, R. (Eds.), *The Art and Science of Entrepreneurship* (pp. 3-23), Cambridge, MA: Ballinger Publishing Company.

Allan, I.S. (2006). *The impact of networking activities on performance of SMEs: A study of Tanzanian manufacturing firms* (Unpupblished doctoral thesis). University of Dar es Salaam, Dar es Salaam.

Andemariam, K. (2003). Women entrepreneurs in Eritrea (Unpublished survey study). Presented at the international conference on the role of research in nation building, 2002 Asmara: University of Asmara.

Anderson, A., Park, J., & Jack, S. (2007). Entrepreneurial social capital: Conceptualizing social capital in new high-tech firm. *International Small Business Journal*, *25*, 243-267.

Babbie, E. (1995). *The practice of Social Research* (2nd ed). Belmont, CA: Wardsworth Publishing Company.

Birley, S. (1985). Social networks and entrepreneurial process. *Journal of Business Venturing*, *1*, 107-117.

Bridley, C. (2005). Barriers to women achieving their entrepreneurial potential: Women and risk. *International Journal of Entrepreneurial Behaviour,2* (2) 144-161.

Butler, J., & Hansen, G.S. (1991). Network evolution, entrepreneurial success, and regional development. *Entrepreneurship and Regional Development*, *3*, 1-16.

Cohen, J. (1968), Multiple regression as a general data-analytic system. *Psychological Bulletin*, *70* (6) 426-443.

Eccles, R.G. (1981). The quasifirm in the construction industry. *Journal of Economic Behaviour and Organisation, 2,* 335-357.

Elfring, T., & Hulsink, W. (2007). Networking by entrepreneurs: Patterns of tie-formation in emerging organizations. *Organization Studies, 28* (12) 1849 -1872.

Field, A. (2013), *Discovering statistics using SPSS* (3rd ed). London: Sage publications.

Fjose, S., Grunfeld, L.A. and Green, G. (2010). *SMEs and Growth in SSA: Identifying SME roles and obstacles to SME growth*. Menon Business Economics: Menon publication 14/2010.

Ford, D., Gadde, L.E., Hakansson, H., Lundgren, A., Snehota, I., Turnbull, P., & Wilso, D. (1998), *Understanding business markets: Interactions, relationships and networks*. London: Academy Press.

Fuentes-Fuente, M.M, Bojica, A.M., Ruiz-Arroyo, M., & Welter, F. (2015). Innovativeness and business relationships in women-owned firms: The role of gender. *Canadian Journal of Administrative Sciences,* John Wiley and Sons Ltd.

Granovetter, M.S. (1973). The strength of weak ties. *American Journal of Sociology,78* (6) 1360-1380.

Granovetter, M.S. (1985). Economic action and social structure: The problem of embeddedness. *American Journal of Sociology, 91* (3), 481-510.

Greve, A., & Salaff, J. (2003). Social networks and entrepreneurship. *Entrepreneurship: Theory and Practice, 28*, 1-23.

Hakansson, H., & Johanson, J. (1988). Formal and informal cooperation strategies in international industrial networks. In *Cooperative Strategies in International Business*, (pp. 369-379). Lexington: Lexington Books.

Hampton, A., Cooper, S., & Mcgowan, M. (2009). Female entrepreneurial networks and networking activity in technology-based ventures: An exploratory study. *International Small Business Journal, 27* (2), 193-214.

Histrich, R.D., & Peters, M.P. (2002) *Entrepreneurship*. London: The McGraw-Hill Companies.

Hite, J.M. (2005). Evolutionary processes and paths of relational embedded network ties in emerging entrepreneurial firms. *Entrepreneurship: Theory and Practice,29* (1), 113-144.

Hite, J.M., & Hesterly, W.S. (2001). The evolution of firm networks: From emergence to early growth of the firm. *Strategic Management Journal,22* (3), 276-286.

Jack, S., Dodd, S.D., & Anderson, A.R. (2008). Change and the development of entrepreneurial networks overtime: A processual perspective. *Entrepreneurship and Regional Development: An International Journal, 20* (2), 125-159.

Jenssen, J.I., & Greve, A. (2002). Does the degree of redundancy in social networks influence the success of business start-ups. *Journal of Entrepreneurship Behaviour and Research, 8* (5), 254-267.

Johannisson, B. (1986). Network strategies: Management technology for entrepreneurship and change. *International Small Business Journal, 5* (1), 19-30.

Johannisson, B. (1987). Beyond process and structure: Social exchange networks. *International Studies of Management and Organization, 17* (1), 3-23.

Johannisson, B. (1995). Paradigms and entrepreneurial network: Some methodological challenges. *Entrepreneurship and Regional Development*, 7 (3), 215-231.

Kenpster, S., & Cope, J. (2010). Learning to lead in the entrepreneurial context. *International Journal of Entrepreneurial Behaviour & Research, 16* (1), 5-34.

Klyver, K. (2008).The shifting consultant involvement. *Journal of Small Business and Enterprise Development, 15* (1), 178-193.

Kuada, J. (2009). Gender, Social Networks and Entrepreneurship in Ghana. *Journal of African Business,10* (1) 85-103.

Laere, K.V., & Heene, A. (2003). Social networks as a source of competitive advantage for the firm. *Journal of Workplace Learning, 15* (6), 248-258.

Lechner, C., & Dowling, M. (2003). Firm networks: External relationships as sources for the growth and competitiveness of entrepreneurial firms. *Entrepreneurship and Regional Development, 15*, 1-26.

MacDade, B.E., & Spring, A. (2005). The 'new generation of African entrepreneurs': Networking to change the climate for business and private sector-led development. *Entrepreneurship and Regional Development: An International Journal*, 17 (1), 17-42.

Mackinnon, D., Chapman, K., & Cumbers, A. (2004). Networking trust and embeddedness amongst SMEs in the Aberdeen oil complex. *Entrepreneurship and Regional Development: An International Journal*, *16* (2), 87-106.

Martin, L. & Wright, L. (2005). No gender in cyberspace? Empowering entrepreneurship and innovation in female-run ICT small firms. *International Journal of Entrepreneurial Behaviour*, *2*,162-178.

Mbura, O.K. (2007). The role of entrepreneurial networks in the acquisition of marketing information resources: Selected manufacturing firms in Tanzania (Unpublished doctoral thesis), University of Dar es Salaam, Dar es Salaam.

Ministry of Trade and Industry. (2013). Eritrea. Asmara: Ministry of Trade and Industry Data Base.

Mitchell, J.C. (1969). The concept and use of social networks. In Mitchell, J.C. (Eds.), *Social Networks in Urban Situations* (pp. 1-50). Manchester: Manchester University Press.

Nchimbi, M.I. (2003). *Gender and entrepreneurship in Tanzania: A comparative analysis of male-female's Start-up motivation, individual characteristics and perceptions of business success* (Unpublished doctoral thesis) University of Dar es Salaam, Dar es Salaam.

National Statistics Office & Fafo AIS. (2013). Eritrea Population and Health Survey 2010. Asmara: National Statistics Office

Neergaard, H., Shaw, E., & Carter, S. (2005). The impact of gender, social capital and networks on business ownership: A research agenda. *International Journal of Entrepreneurial Behaviour*, *2* (5), 338-357.

O'Donnel, A., Gilmore, A., Cummins, D., & Carson, D. (2001). The network construct in entrepreneurship research: A review and critique. *Management Decision*, *39*, 749-760.

O'Reilly, M., & Hart, M. (2003). *Global entrepreneurship monitor report, Northern Ireland*. Belfast and London: Invest NI and London Business School.

Palakshappa, N., & Gordon, M.A. (2007). Collaborative business relationships: Helping firms to acquire skills and economies to prosper. *Journal of Small Business and Enterprise Development*,14 (2) 264-279.

Peltier, J.W., & Naidu, G.M. (2012). Social networks across the SME organizational lifecycle. *Journal of Small Business and Enterprise Development*, *19* (1), 56-73.

Premaratne, S.P. (2001). Networks, resources and small business growth: The experience in Sri Lanka. *Journal of Small Business Management*, *39*, 363-371.

Reynolds, P.D., Bygrave, W., Autio, E., Cox, l.W., & Hay, M. (2004), *Global Entrepreneurship Monitor 2003*, Executive Report, Babson College/Ewing Marion Kauffman Foundation, London Business School.

Rutashobya, L.K., Alan, I.S., & Nilsson, K. (2009). Gender, Social Networks and Entrepreneurial Outcomes in Tanzania. *Journal of African Business, 10* (1) 67-83.

Saunders, M., Lewis, P., & Thornhill, A. (2012). *Research methods for business students* (6th ed.) Harlow, Essex, England: Pearson Educational Limited.

Spring, A., & Rutashobya, L.K. (2014). *The 2014 Africa Prosperity Report*. London: Legatum Institute.

Steier, L., & Greenwood, R., (2000. Entrepreneurship and the evolution of Angel financial networks. *Organisation Studies, 21* (1), 163-92.

UNDP (2014), *UNDP Human development report 2014: Sustaining human progress, reducing vulnerabilities and building resilience*. New York, NY.

Williamson, O. (1975). *Markets and hierarchies: Analysis and antitrust Implications*. New York: Free Press.

Williamson, O.E. (1991). Comparative economic organisation: The analysis of discrete structural alternatives. *Administrative Science Quarterly, 36*, 269-96.

Xu, Z., Lin, J., & Lin, D. (2008). Networking and innovation in SMEs: Evidence from Guangdong province China., *Journal of Small Business and Enterprise Development, 15* (4), 788-801.