THE EFFECTIVENESS OF ENTREPRENEURIAL NETWORKS IN THE ACQUISITION OF MARKETING INFORMATION (MI) RESOURCES: SELECTED SMALL MANUFACTURING FIRMS IN TANZANIA

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ABSTRACT

Using a sample of 210 small-sized manufacturing enterprises (SSEs) from the two largest commercial cities of Tanzania namely Dar es Salaam and Mwanza, the article examines the roles that structure (density and size), and contents (strength of ties) of inter-firm and social (types) networks play on marketing information acquisition of the SSEs. The two most important types of networks of the inter-firm and the social networks were used in determining which of their properties contribute most to the MI acquisition. Six hypotheses were developed from the properties of density, network size and network ties of the social and inter-firm networks as independent variables and respective marketing information as dependent variables. A much more focused analysis involving multiple regression analyses was used. The findings revealed that the contribution of individual properties from inter-firm and social networks leading to marketing information are different. Only the 'density' of networks and 'strength of ties' were found to contribute most to the social network based marketing information. The 'size' construct had positive but less significant relations with marketing information acquisition. On the other hand it is 'size' and 'density' of networks that yield most inter-firm based marketing information. The 'strength of ties' was found to have a positive effect but statistically less significant to the inter-firm based marketing information. The study recommends significant investment in both inter-firm and social networks. However, when it comes to social networks, density and strength of ties matter most; while in the inter-firm, size and density matter most.

Key words: business networks, marketing information, small business and social and inter firm networks

INTRODUCTION

Small and Medium Enterprises (SMEs) and their importance globally have been sufficiently documented in literature (Mbura, 2014; UNIDO, 2002). Both developed

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and developing countries focus on SMEs because it is believed that they bring huge economic benefits in terms of employment creation and income generation (Olomi, 2009). According to UNIDO (2002) there are estimated to be more than 3 million SMEs, employing more than 5.2 million people in Tanzania, of which some 45% are located in urban and the remainder in rural areas. Jaensson and Nilsson (1998) posit that Tanzania's share of small firms in total wage employment amounts to 57%, whereas its contribution to the Gross Domestic Product (GDP) is about 35% (Wangwe, 1999). Small-scale enterprises are also beneficial because they promote national productivity, provide materials and components to other industries, and promote rural development that finally leads to reduction of rural-urban migration. In the urban areas, SSEs have been regarded as the largest job provider and show the highest employment growth rate estimated at 10% per year. They also supply goods and services to the consumer at a reasonable price.

Despite the contribution of SMEs in countries' development and economic growth, their growth and development in developing countries face a lot of challenges. These include difficulties in accessing financial credit, poor managerial skills, lack of skilled staff, uncontrolled growth, lack of government business support services, serial and historical traditions, high cost of inputs, advocacy capacity, inadequate quality control, and cultural environment (Cook & Nixson, 2000; ILO, 2003; Mbura, 2013). This article explores the opportunity available for the SSEs to use networks for their success with particular emphasis on marketing information accessibility.

The need for network based marketing information for SSEs

It has been argued that small businesses have less to spend on marketing, thus resulting to lack of market power and dependency on a small customer base. Accessing information on the traditional 4 marketing mix elements (4p's) using the typical marketing research processes becomes quite unaffordable. Collins and Shaw (2001) argue that SSEs entrepreneurs rarely have the time, resources or the inclination to purchase market research reports or seek advice of business advisers. This results in an environment which is less controllable and uncertain than that of larger firms. Most small businesses continue to trade in a limited geographical area which ties their fortunes closely to the cycles of the local economy, with limited opportunities to compensate for any downturn (Storey, 1982). So, essentially, small firms have a limited customer base and limited marketing ability which make application of the traditional marketing practices difficult. To resolve such marketing problems, alternative marketing practices would provide the key interface between a small firm and its external environment.

It has been observed that social capital and networks among others have been instrumental in the success of the firm through providing different resources (including information) needed by firms' existence and survival (Aldrich & Zimmer, 1986). Yan (2013) contends that networks are mechanisms that arise from the heterogeneity of agents as they need to interact with others in order to access resources, or combinations

of resources, they do not possess or cannot develop. In today's pressing environment, networking enables firms to take advantage of opportunities and facilitates exchange of resources (Jack, Dodd, & Anderson, 2008; Rutashobya, Alan, & Nilsson, 2009). Moreover, the increasing environmental pressure, competitor rivalry and difficulties of maintaining competitive advantages have led to the need to move efforts towards the retention of customers, building loyalty and creating long-term relationship (Barnes & Lynch, 1998). Such a rigorous and demanding market environment triggers the need for customer-driven approaches in dealing with prospects. To be able to fulfil this end, accessibility to target market information is imperative.

In Tanzania, various stakeholders have realised the need to impart skills on networks as key to the success of small enterprises. According to Rutashobya (2000) and K'obonyo (1999), for small firms to get out of their smallness and newness they must overcome their liability of isolation by engaging in networks. Moreover, success in business comes from satisfying customers personal needs and wants profitably (Shuman *et Al.*, 2001:102). To be able to do that is to engage in an iterative process of building a business through learning from paying customers. The key issue lies on how one learns from paying customers. Social exchange theory posits for the need for interaction and therefore creating networks with other firms. Accordingly, the most effective and sustainable networks are initially based on informal relations. It is therefore imperative to identify non-institutionalised sources of relevant information and organising networks is one way to secure information about ongoing advantage which may eventually enhance competitive ability of small enterprises (Brown *et al.*, 1990). But more important is to access such information at affordable cost. The Transaction Cost Theory by Williamson (1975) supports the view that networks are cheaper sources to access such information, although it is documented that characteristics of networks have different potentials to the access of resources (Aldrich & Zimmer, 1986). Therefore, there is substantial impetus to determine which of these characteristics as depicted in the Social Network Theory yield most benefits (i.e. MI) to the SSEs. In this article our specific focus is on the SSE manufacturing sector.

Context of the study

MI is considered as information about what customers need in terms of product attributes; price desired, appropriate distribution and effective communication (Hirsch & Peters, 2000). In the competitive era, the importance of MI has even been more apparent. This is mainly because the survival and prosperity of the organisations have been connected to the ability of the organisations including SSEs in determining needs, wants and interests of the target market and delivering the desired satisfaction more effectively and efficiently than what competitors do (Kotler *et al*., 2012). Seeking information about what the market needs is therefore imperative. Succumbed by other related problems, prosperity of such SSEs has been adversely affected. Inability to access MI has been cited as one of the causes for such predicament.

Several studies have reflected MI relevance for the survival and prosperity of small firms. Some of the constraints facing small and medium enterprises (SMEs) in the world include the strict legal and regulatory environment, lack of access to markets, premises and financing, poor technology, external sector reforms, fiscal reforms, domestic deregulation, physical and technological infrastructure, the banking and finance structure, legal and regulatory framework, lack of access to training and information and market related constraints, unfavourable business climate, shortage of capital, stiff competition, cheap imported articles, lack of business and management skills, shortage of information and access to advisory services (Morris, 1998:33; Wangwe, 1999; Nyiti, 2000; Borter, 2000; Temu, 2000). On the other hand there are liabilities of smallness and newness and therefore isolation as a constraint (K'obonyo, 1999).

In response to these problems, the Government of Tanzania has taken various policy-based measures, which began with removal of repressive environment of the SSEs (Verspreet & Berlage, 1998). In turn, a motivating environment for the emergence of small business, tailored institutions for providing finance, training and advisory services were gradually developed. Despite some success many of those institutions have been labelled as ineffective and bureaucratic in delivering services (Merezia & Mbura, 2014). Moreover, efforts directed at assisting SSEs in accessing market/marketing related information has been inadequate despite 'market constraints' being cited as some of the critical problems (Imperial College, 2002). There are no reliable and effective set institution arrangements to help firms access MI and give them assistance to penetrate new markets. The resulting impact is that small firms have found it difficult to compete and hence continued to suffer from a number of problems including the one of limited market. There have been continued decline both in sales and employment in many categories of firms in the manufacturing sector of Tanzania (Verspreet & Berlage, 1998). Rutashobya and Allan (2001) propound that SSEs prosperity has not been given adequate attention despite its social and economic importance in Tanzania.

Potential advantages that smaller firms can derive from a network of relationships have recently attracted the attention of public agencies charged with assisting SSEs development. Mbura (2013) argues that the importance of networks becomes more apparent in an uncertain environment which typifies most of least developed countries (LDC) context. The Guardian (2003) quoted the Insurance Institute of Tanzania (IIT) president arguing for the need to create local networks for local operators so that they survive in the era of globalisation. O'Donnel *et al*. (2001:5), Premaratne (2001), and Jensen and Greve (2002) cited benefits of networks as information access, introduction to business associates, provision of product and service ideas, and finance and support access. Despite such importance the explanation as to how networks contribute to the success of the business is scanty, differs from person to person, and sometimes contradicting (Burt, 1992; Jenssen & Greve, 2002; Aldrich & Zimmer, 1986). Premaratne (2001) came with a typology of inter-firm, social and support networks in finding the relationship between networks and resource accessibility. He was able to

conclude (though not beyond the size of networks) that different types of network had different potentials to the access of information, finance and non-material support in Sri Lanka. Mitchell (1969) argues that what matters in the entrepreneurial networks is both intensity (structure) and interconnectedness (content) of the members of the network. However, most of the few related studies, mostly in developed countries, have concentrated on the structure of the networks. Moreover, such studies have been non-SSE specific and point to contradictory results. Methodologies used to carry out these studies have also been inconsistent and diverse. This is probably explained by the fact that the field of networks has only recently gained its importance in the business field and that different country contexts produce different result.

Overall, examining the types and characteristics of networks and how they impact on a firm's ability to align itself to the market needs is crucial to improving marketing competitiveness of the SSEs. The study about the types, nature and content (network ties) of entrepreneurial networks is therefore timely and imperative. This is partly why Rutashobya and Allan (2001) proposed the need to explore the influence that social ties have on business development in Tanzania. The focus of this study therefore was to attempt to bridge this gap by answering the following question:

What roles do structure (density and size), and contents (strength of ties) of inter-firm and social (types) networks play on marketing information acquisition of the SSEs' manufacturing firms?

The article more particularly seeks to examine the strength of relationship between 'density', 'size' and 'strength of ties' of the inter-firm networks among SSEs and accessibility of marketing information. It then attempts to determine the strength of relationship between density, size and strength of ties of the social networks among entrepreneurial SSEs and accessibility of marketing information. Finally, it seeks to ascertain the most effective type of entrepreneurial networks to the Tanzanian SSEs marketing information gathering.

The article begins with this background, and then proceeds to review theoretical and empirical studies followed by methodological issues. The third part of the article includes the findings, followed by discussion. Finally, some recommendations are shared.

THEORETICAL DISCUSSION

Despite lack of universality in defining 'network', most authors agree that a network involves actors/units/nodes who are connected in a certain structure for certain anticipated gains. Borrowing from Birley and Callghan (1994), Twombly (2001:43) and Iaccobucci (1996), a business **network** is therefore defined as consisting of a set of actors and their structural and content relations where the focal firm regularly and for a sustained period interacts, at least informally with friends, family members or other

firms for the purpose of gaining economic advantage in accessing information and other resources for gainful use in their firms.

Literature shows that entrepreneurial networks fall into inter-organisational and entrepreneurs personal networks (Premaratne, 2001; O'Donnell *et al*., 2001; Ring & Van de ven, 1994; Olomi, 2009). The two are referred to as inter-organisational/inter-firm networks and social networks respectively and are sometimes subsumed into one general network construct, which contains aspects of both (O'Donnell *et al*., 2001). An inter-firm network has been referred to as the connection or interaction between a focal firm and other firms (Premaratne, 2001). Jaensson and Nilsson (1997) argue that by networking and cooperation small enterprises are able to reap advantages in at least joint purchasing, cooperation and marketing. It is clear from the social exchange theory by Blau (1964) that firms will operate collaboratively if they see it attractive to share with other firms. Such dependence relationship may partly be reflected in MI sharing where in reciprocity the focal firm exchanges information about what price customers want to pay, what distribution approach is appropriate, what quality customers want and what is likely to be the most effective promotion approaches -commonly referred to as marketing mix variables in marketing jargon (Kotler, 2012).

Social networks on the other hand, refer to business collaboration of the focal firm owner/manager with friends, acquaintances or relatives (Premaratne, 2001). It has sometimes been related to Personal Contact Networks (PCN). PCN has to do with face-to-face contacts between individuals who find one another attractive for one reason or another (Iacobucci, 1996). From a business point of view, actors may be seeking advice, giving advice or both; exchanging technical and marketing information, exchanging gossip about others in the organisation, making loans and collecting interest, giving/receiving moral support in a time of crisis as well as sharing affection or secrets. In the course of the social relations, business relationship is established.

At times, the network perspective has evolved due to critique of the old marketing paradigm that considers markets as areas of free exchange (Brunninge, 2001:2). The Transaction Cost Theory by William (1985) puts it clearly that networks are considered hybrid for hierarchical based approach and markets. They accommodate the problems of possible opportunism and bounded rationality likely to be embedded in free exchange especially for asset specific, frequently purchased resource and items of high uncertainty.

Social Network Theory

The Social Network Theory connotes that networks are depicted as a series of direct and indirect ties from one actor to a collection of actors. Furthermore, it is accepted that network analysis should consider both the *structure* of the network and the nature of *interactions* between network actors. Social network is described as a set of morphological dimensions, which consider the structure of network and interaction dimensions (Mitchell, 1969). The *structural* dimensions include the focus of network inquiry 'anchorage' and this is thought to lie somewhere between personal relations

and inter-organisational relations. The structural dimension of *network size* has also been considered an important criterion. Networks literature points out that network size is positively related to access to resources (including MI) and organisation initial performance (O'Donnel *et al.*, 2001). Several studies have counted the contacts that entrepreneurs have with other actors (Birley, 1985; Aldrich & Zimmer, 1989; Jenssen & Greve, 2002). However, Burt (1992) argued that it is not the absolute size but more the effective size of networks, which is derived by deflating the absolute size of networks. The other dimensions are the *density* which measures the extent to which actors in the network are connected to one another (Baker, 2000). On the other hand, the *interaction* dimensions describe the strength of network ties in terms of the *content* that depicts the meaning that people attach to relations and their understanding of the implications that their environment may have. The same two people can share a business and friendship relationship. This is linked to 'intensity', which refers to the extent to which individuals honour their obligations to others in the network. In this article we operationalise contents by translating them into closeness of ties. The other interactional dimension is the *frequency*, which describes the number and amount of time the various actors spend interacting in relationships. Finally, there is the *durability*, measuring the length of time a relationship has lasted (Mitchel, 1969).

Our article draws a lot from this theory. Most important is the fact that it addresses issues of structure and contents of networks, which are instrumental in developing the hypotheses that were used in this article.

EMPIRICAL STUDIES AND HYPOTHESES FORMULATION

A variety of studies in various parts of the world, Tanzania inclusive, for both manufacturing and service sectors have found out that networking is highly beneficial in growth and international market development of small and large businesses (Coviello & Munro, 1995; Mazzarol, 1998; Bryson, *et al.*, 1993; Fuller-Love & Thomas 2004). Brusco (1996) found that large-scale firms were more involved in networks. It has been further argued that networks are necessarily related to economic growth particularly networks involving the gathering and dissemination of information (Donkels & Lambrecht, 1995). Gilmore *et al.* (2001) and O´Donnel and Cummins (1999) found out that owner/manager realise that maintaining a good network with regular clients is important for the acquisition of financial and information resources. In the quantitative study by Schneider and Teske (1995) of the relevance of social networks to new entrepreneurs in Norway, it was found that entrepreneurs use their non-business specific relationship for mobilising resources, getting support and help and establishing viable business relations and that networks matter to entrepreneurs because they create efficiencies in the assembling of resources necessary in the entrepreneurial process. Basu (1998) found out that cultural traditions and social networks played some role in motivation into business entry and those who used them as a source of advice and information achieved slightly higher growth rates than those

who did not use them. Holbek and Jenssen (1998) found out that both weak and strong ties had a positive significant effect on the dependent variable, which was revenue.

Weak ties are most important in the initial network and strong ties are most important in the emerging network. Thus social network has both positive direct and indirect effects through resources on start up success. This article deviates from the proposition by Burt (1992) who argued that weak ties do better. In a study by Jenssen and Greve (2002), on how network redundancy/density influences entrepreneurial success in Norway, it was established that all the resources had direct effect from social network. The strongest predictor of entrepreneurial success was the access to financial resources and access to information. Surprisingly, it was realised that network redundancy and higher number of ties affected access to resources positively. This contradicts the Burt (1992) view that diversity of focal firm actors leads to more information. The success of the firms came from their ability to access information and financial resources, which they do by contacting their social network. Some contacts provide more resources than others but in general both weak and strong ties are important.

Premaratne (2001) studied networks in Sri Lanka in the contexts of inter-firm and social networks. Three types of actors – *social, supporting networks,* and *inter-firm* – were involved. It was found that there were correlations between being involved in entrepreneurial networks and receiving resources in the form of finance and information. Barr (1998) studied enterprise performance and the functional diversity of social capital in Ghana. He found out that networks can affect enterprise performance directly by providing entrepreneurs with information about technologies and markets.

In Tanzania, Trulsson (1997) was interested in understanding industrial entrepreneurship and structural change in North-west Tanzania. It was found that networks are not crucial for entrepreneurs but dyads are (one to one relations). Another Tanzanian related study was by Murphy (2001) who examined the social factors as related to small and large scale manufacturing firms. It was found that networks facilitate innovation when they are structurally dense and spatially extended and when participating business people are willing to create strong bonds in their local communities. Nnunduma (2003) conducted a qualitative study on the structure and behaviour of food trading networks in Tanzania and observed that reciprocity, durability, and reachability were key attributes of strength of ties. Swabir (2002) studied the social relationships and networks on the growth of SMEs in Tanzania and found that networking had assisted in terms of business information, finance, physical assets and moral support. Rutashobya and Jaensson (2004) explored the role of networks in internationalisation of small firms in Tanzania. It was found that many owner/managers belonged to at least more than one network relationship. A study by Kristiansen *et al.* (2005) dealt with information flow and adaptation in Tanzanian cottage industries. Findings indicate that social networking was a dominant contributor in accessing market information. Rutashobya, *et al.* (2005) carried out an exploratory study on the networks, relationships and performance of SMEs in the shipping sub-

sector in Tanzania. Results from this study reveal that not all firms use networking as a strategy.

Conclusively, most studies have been outside Tanzania and even then they provide contradictory results, suggesting a need for further academic enquiry.

Synthesis of the article

The propositions that follow have their basis upon the view that information is being acquired from the environment. Accordingly, access of marketing information through networks helps in cutting two major constraints namely time and money (Holbek & Jenssen, 1998). But we have already argued that size, density and strength of ties of networks have different potentials to accessing such marketing information. The basic proposition is that such characteristics of networks will have different potentials depending on whether the relationship is inter-firm based or social-based. The nature of the network characteristics on the basis of a typology of inter-firm and social networks are thus related to the extent to which a focal firm enjoys MI access in its aggregate. Such information involves those leading to enabling the focal firm to meet customers' needs more competitively. Specifically, they include those related to desired product attributes, price, distribution and effective communication/promotion in the light of consumers' behaviour. We are thus able to compare the role that each characteristic has on MI accessibility through our typology of inter-firm and social networks. So this article attempts to determine which of these constructs contribute more to acquisition of marketing information. The achievement of this research objective was made possible through the formulation of the following hypotheses.

(i) Density of networks and marketing information

- *The higher the density of **inter-firm networks** the higher the amount of marketing information acquired.*
- *The higher the density of **social networks** the higher the amount of marketing information acquired.*

(ii) Strength of ties and marketing information

- *The stronger the ties in **the inter-firm networks** the more the amount of marketing information acquired.*
- *The stronger the ties in the **social networks** the more the amount of marketing information acquired.*

(iii) Size of networks and marketing information

- *The larger the number of actors in the **inter-firm networks** the higher the amount of marketing information acquired.*
- *The larger the number of actors **social networks** the higher the amount of marketing information.*

METHODOLOGY

In this study owner/manager, owners and employee managers were chosen from 210 sampled firms depending on who was in-charge of the firm and could easily be accessible. Firms that were included in the sample needed to have been in existence for at least three years, which is above what had been proposed by Ostgaard and Birley (1996). Statistically, in order for generalisation to take place, Tabachnic and Fidel (1996) suggest that rule of thumb should be used - that **N≥ 50+8m** where m is the number of independent variables and N is the number of cases. Given our 6 independent variables, the size of the sample meeting this criterion should be 50+8(6) =98. The second rule of thumb requires that **N ≥104+m.** Translating this rule into our data we arrive at a sample of (104+6) =110. We think these results provide the minimum requirements of the sample size because the literature suggests that larger samples have the effect of increasing the statistical power by minimising errors (Hair *et al*., 2006). Kotler *et al*. (2012) argue that if well chosen, samples of about 1% of a population can often give good reliability. The size of the population size is however unknown in this study due to lack of exhaustive sampling frames. Hair *et al*. (2006) considered samples of 200 and above as large samples. In the current study, a total of 210 firms were randomly picked from the two largest cities of Tanzania. The random sampling procedure has been credited for increasing statistical efficiency, providing self-weighing sample, and for being much easier to carry out (Cooper & Schindler, 2003). These samples were drawn from the Small Industries Development Organisation (SIDO) and the City Directors' offices. Mbamba (2003) and Barr (1997) drew similar sample sizes in related studies in Tanzania and in Ghana, respectively. Other Tanzanian studies had even involved larger samples (Olomi, 2002; Nchimbi, 2003) than the sample used in this study.

Validity and reliability of data collecting instrument

Data collection instrument was tested for accuracy and consistency. In assessing measurement scales accuracy and consistency are usually associated with 'validity' and 'reliability' respectively (Hair *et al.*, 2003). As for reliability, Cronbach alpha coefficient test was used. Findings indicate that for **social networks,** *strength of ties* had Cronbach alpha of 0.954, *density* had 0.897 and **social networks** *marketing information* had 0.966. As for the **inter-firm networks,** *strength of ties* had Cronbach alpha of 0.948, *density* had 0.847 while **inter-firm network** *marketing information* had 0.830. Given that Cronbach alpha coefficient is at least 0.8 for each identified variable they are all considered to be very good and hence reliable (Hair, 2003).

As for validity, the current instrument went through several stages of screening (Royse, 1995; Hair *et al.*, 2003). Firstly, two colleagues involved in PhD studies were consulted for comments. Next the instrument was delivered to a panel of four experts who independently assessed the instrument for standards. The instrument was then exposed and used in training four research assistants. Before training was conducted, the

trainees were asked to fill in the questionnaire in a dummy venture of their own selection. They were asked to choose among the four types of manufacturing firms under research, i.e. metal work, shoe making, food processing and wood work. They were then asked to present their results in front of others in the researcher's presence. Few problems in misconceiving some parts required further adjustment in the instrument. The instrument was then exposed to the 10 judgmentally selected respondents in a pilot survey. Some few questions were revised for clarity to avoid potential reliability and validity problems.

FINDINGS AND DATA ANALYSIS

Distribution of respondents by location, sectors of firms and size of employment

A total of 210 respondents from two oldest and largest cities in Tanzania namely Dar es Salaam (145[69.5%]) and Mwanza (65[30.5%]) were chosen for information. The respondents were from wood work - 48.1%, metal work - 34.3%, food processing - 13.8% and leather - 3.8%. In terms of size of employment, the majority of the firms under study (91%) employed between 6 and 20 employees, and only 9% of the firms employed above 20 people.

Mean values and standard deviations for the constructs

The mean values and standard deviations for the constructs were calculated from a 5-point scale. The mean is the average score of the construct and measures the central tendency (Hair *et al.,* 2003; Saunders *et al.,* 2012). Table 1 below provides an indication of the mean values and standard deviation of the constructs that were used in this study. All the constructs had their means above the medium point. It is interesting to note that the social networks marketing information (SOCMI) and the inter-firm marketing information (INTEMI) provide very close results of 3.4165 compared to 3.4770 respectively. It is tempting to argue that attitude of the respondents towards the two types networks in terms of marketing information acquisition are similar. For other independent variables constructs, the size (SOCSIZE and INTSIZE) has the highest mean. This is followed by the strength of ties on both sides. The least is the density of networks. Nevertheless the mean scores only give the indication and may not be exhaustively and solely used to give conclusive results. For this reason, statistical analysis was necessary for testing the hypotheses.

The standard deviation on the other hand describes the spread or variability of the sample distribution values from the mean and perhaps most valuable index of dispersion (Hair *et al.,* 2003; Saunders *et al.,* 2012). When the estimated deviations are >3, it is likely that there is greater variability in the respondents' opinions. The maximum standard deviation was .75016, which is (<1) in all cases. This suggests that the respondents were very consistent in their opinions.

Table 1: Mean score for the constructs under study

Code	Label	Mean	Standard Deviation	N
INTEMI	Inter-firm network marketing information	3.4770	.44183	206
INTESTTI	Inter-firm network strength of ties	3.2068	.42591	206
INTSIZE	Inter-firm network size	3.9098	.57916	206
INTEDENS	Inter-firm network density	3.0115	.73994	206
SOCMI	Social network marketing information	3.4165	.62213	210
SOCSTTI	Social network strength of ties	3.2347	.44261	210
SOCSIZE	Social network size	3.5281	.71590	210
SOCDENS	Social network density	3.1216	.75016	210

Correlation amongst the variables

The correlation coefficient Pearson r was used to assess this linkage as the data had been collected from a metric scale, which is best suited for this correlation coefficient (Cooper *et al*., 2003; Saunders *et al.*, 2012). Conventionally, correlations coefficient (r) and their strength of associations can be depicted in terms of *social networks* and *inter-firm* constructs. These constructs are described in the sections that follow.

Correlation amongst the social networks constructs

The current study measured how size of the social network, strength of ties, and density correlated with social networks marketing information. The interest here was to find out whether marketing information of the social network (SOCMI) was linked to these independent variables. The Pearson Correlation (*p*) was used to test data from the 210 respondents. The results as shown in Table 2 indicate that there is positive relationship between the social network marketing information (SOCMI) as a dependent variable with all the independent variables of the strength of ties, density and size of the social networks. However, statistically significant relations are found with SOCDENS (r = 0.641) and SOCSTTI (r = 0.519) only. With the SOCSIZE (r = 0.08) there are some positive relationships but statistically very insignificant. In this study the level of significance was 0.01 (1%) meaning there is 1 out 100 chances that one would be wrong by rejecting the null hypotheses. The null hypotheses by implication imply that there is no significant relationship between the SOCMI and the independent variables constructs. This gives us confidence at the level of 99% that there is a statistically positive relationship between social networks constructs and marketing information although SOCSIZE has statistically weak relationship. SOCDENS correlates with SOCSTTI on the one hand at coefficient of correlation of .383 and SOCSTTI correlates with SOCSIZE at coefficient of .293 on the other. This kind of relationship signals the presence of multicollinearity, a problem which calls for special attention before further analysis is made. This point is dealt with in the final data analysis part.

Table 2: Correlation output for social networks

	SOCSTTI	SOCSIZE	SOCDENS	SOCMI
SOCTTI	1	.293**	.383**	.519**
SOCSIZE	293**	1	.065	.080
SOCDENS	.383**	.065	1	.641**
SOCMI	.519**	.080	.641**	1

**** P< 0.01; *P< 0.05**

Correlation amongst the inter-firm networks construct

The data in Table 3 initially involved 210 cases. Having identified and eliminated 4 outlier cases, the sample dropped to 206. In this particular part, the purpose was to establish the correlation between the inter-firm marketing information (INTEMI) and the INTESTTI (strength of ties), INTSIZE (inter-firm size) and INTEDENSI (inter-firm density). The interest here was to examine whether marketing information of the inter-firm network was linked to three independent variables.

The Pearson Correlation was used to test data from the 206 respondents. The results show that there is a positive relationship between marketing information with the independent variables of strength of ties, density and size of the inter-firm networks. Statistically, all relations are positive and significant at 0.01 (%) and 0.05 (5%) levels. So there exists a significant and positive relationship between the inter-firm marketing information (INTEMI) and the inter-firm size (INTSIZE), inter-firm strength of ties (INTESTTI) as well as inter-firm density (INTEDENS). The null hypotheses are thus rejected at 95% level of confidence. All of the hypotheses are therefore statistically confirmed, and it could be concluded with some degree of confidence that the variables share some association in the population. To end this part, it is worth noting that there is a problem of multicollinearity. This results from INTSIZE and INTESTTI on the one hand and INTDENS and INTESTTI on the other. This problem is dealt with in the regression analysis to be discussed.

Table 3: Correlations output for inter-firm networks

	INTESTTI	INTSIZE	INTEDENS	INTEMI
INTESTTI	1	.208**	.188**	.200**
INTSIZE	.208**	1	.091	. 404**
INTEDENS	.188**	.091	1	171*
INTEMI	.200**	. 404**	. 171*	1

**** P< 0.01; *P< 0.05**

CONCLUSION

By diagnosing the variables found in the correlation, we find that all the independent variables have shown a positive relationship with the marketing information acquisition of both the inter-firm and social networks. In fact, all but the SOCSIZE has shown

statistically significant relationship. Another observation is that in both sets of inter-firm and social networks, there is significant correlation amongst independent variables. SOCSTTI correlates with both SOCDENS and SOCSIZE but the latter two variables do not correlate amongst themselves. On the other hand INTESTTI correlates with both INTSIZE and INTDENS but the two others do not correlate amongst themselves. So, one could argue that strength of ties, regardless of the type of network, has the tendency to relate with size and density. It is important to reckon that multicollinearity is known for causing problems in the predictive ability of the independent variables. So it should be handled before further analysis of data.

Results of data analysis through multiple regressions

This part is divided into two main areas. The first section is devoted to discussion regarding testing of the assumptions behind the use of the multiple regression models. The second part is retained for the actual analysis having satisfied the conditions of model fitness.

Assumptions behind the use of multiple regressions

Before conducting multivariate analysis like this one, it was necessary to test the assumptions underlying the statistical bases for the analysis. After this had been done, it was then possible to make statistical inferences on the results (Hiar *et al*., 2003; Tabachnic *et al*., 2006; Royse, 1999). The SPSS software has been instrumental in facilitating these tests. Diagnoses on linearity, normality and multicollinearity assumptions were carried out and data was all cleared from them.

Normality

Table 4 below shows the results of kurtosis and skewness values. According to Hair *et al.*, (2003, 2006), and Saunders *et al.* (2012)), the findings suggest that the distributions of these variables are normal.

Table 4: Kurtosis and skewness tests

Variable	Skewness	Kurtosis
INTEMI	0.162	0.597
INTESTTI	0.479	0.222
INTSIZE	-0.381	-0.013
INTDENS	0.185	0.078
SOCSTTI	0.615	0.976
SOCSIZE	-0.084	-0.409
SOCDENS	0.218	-0.297
SOCMI	-0.479	0.358

HYPOTHESES TESTING AND ANALYSIS

(a) Social networks and marketing information analysis

The specific purpose in this case was to test the hypotheses which were earlier on stated as follows:

(a) The higher the density of social networks the higher the amount of marketing information acquired.

(b) The stronger the ties in the social networks the more the amount of marketing information acquired.

(c) The larger the number of actors in the social networks the higher the amount of marketing information.

Multiple regressions

The test involved testing all the three constructs and therefore hypotheses at the same time. It involved using a stepwise method. Pearson correlation was used as the data had been collected from a metric scale (Saunders *et* al., 2012). The size of correlation is used to quantitatively describe the strength of the association. If the correlation coefficient is statistically significant, the null hypothesis can be rejected; and thus it could be concluded with some degree of confidence that the variables share some association in the population. In addition to examining the correlation, we squared the correlation coefficient to get the coefficient of determination or R^2. The coefficient of determination tests the model fitness and ranges between 0.000-1.00 and represents the amount of variation explained or accounted for in one variable by one or more variables.

Model fitness

Table 5 shows the test for model fitness in this particular study. The $\mathbf{R^2}$ and **F test** were used to measure the overall significance of the estimated regression line (Gujarati, 1992). Further test of the model fitness constituted the F-test which tests whether R^2 is significantly different from zero. The model displayed considerable explanatory power and it was quite robust. The model explains 40.8% and 49.4% variation of the marketing information as explained by the social density on the first model and social density and social strength of ties on the other for the second model. The model fitness proved to be good at 1% level of significance to both when social density was the only independent variable and when both social density and strength of ties were considered. The results were statistically significant taking into account the sample size and number of independent variables (Hair *et al.*, 2006). The F values of 145.268 and 103.075 for models 1 and 2 respectively confirm that the models are fit at even 1% level of significance. The standard error of estimates indicate how much the regression coefficient will vary between samples of the same size taken from the same population

(Hair *et al*., 2003). Our sample errors as shown in Table 5 are small, indicating more reliable prediction. The results are therefore statistically valid.

Table 5: Tests for model fitness of SOCMI

Model	R	R Square	Adjusted R square	Standard error of the estimate	F values	Sig.
1	.641[i]	.411	.408	.47852	145.268	.000
2	.706[ii]	.499	.494	.44249	103.075	.000

(i) Predictors (Constant), SOCDENS
(ii) Predictors (Constant), SOCDENS, SOCSTTI

Regression coefficients for the SOCMI

Table 6 shows two models having influence on the marketing information acquisition of the SSEs. The first model shows the social density (SOCDENS) being the most powerful predictor to the dependent variable of the social network marketing information (SOCMI). The second model consists of the constant and the variable social density (SOCDENS) and the strength of ties (SOCSTTI). The social density appears to be the most important predictor of marketing information acquisition. The beta value indicates that the relationship is strong at .641 when SOCDENS stands alone. The second model adds the strength of ties (SOCSTTI) to the first model. When combined with strength of social ties the beta values for social density becomes lower at .518 while the strength of social ties has the beta[‡] value of .321. The overall impact on the marketing information is relatively improved. All of these are statistically significant at 1%. The Variable Inflation factor (VIF) which measures the problem of multicollinearity stands at 1.000 for social density without strength of ties, and 1.172 for social density and strength of social ties combined. As alluded to earlier, the social density (SOCDENS) is affected by other independent variables of strength of ties (SOCSTTI) and size of social networks (SOCSIZE) at VIF level of 1. The effect is nevertheless too insignificant to consider as it is far below 10, which is the maximum acceptable VIF. In the second model the VIF was found to be 1.172 suggesting also that the initially signalled multicollinearity in the correlations analysis was so low as to have any effect on the influence of these two independent variables on the social network marketing information acquisition. In both cases the VIF falls within acceptable range since it is below 10. As for tolerance, which should not fall below .10, the criterion is also met as the tolerance is by far above 0.10. the regression coefficients are presented on Table 6.

[‡] The beta coefficients (ß) show the relative contribution of the two independent variables to the explanatory power of the regression equation.

Table 6: Coefficients test for SOCMI

	Model	Beta (std coefficients)	t	Std error	Sig.	VIF	Tolerance
1.	(Constant)	.641	12.400	.142	.000	1.000	1.000
	SOCDENS		12.053	.044	.000		
2.	(Constant)		2.677	.230	.008		
	SOCDENS	.518	9.733	.044	.000	1.172	.853
	SOCSTTI	.321	6.021	.075	.000	1.172	.853

Conclusion

The findings in Table 6 show the regression coefficients of the independent variables of SOCDENS and SOCSTTI. The findings suggest that only those two independent variables contributed significantly to prediction of the social network marketing information (SOCMI). The size variable had positive relationship but could not meet the minimum criteria established by the stepwise method, hence was excluded from the model. The constructs, which remained significantly contributory to the marketing information, were density and the strength of ties. Social density is seen as the most important factor contributing to the prediction of the social-marketing information followed by the strength of ties. The standard errors[§] were very low for each variable suggesting a higher degree of confidence on the results. Consequently, the hypotheses on social networks typology are supported except for size construct which does not contribute significantly to the marketing information accessibility though it has positive relationship with it.

(b) Inter-firm networks and marketing information

The purpose was to test the hypotheses which were earlier on stated as follows:

(i) The higher the density of inter-firm networks the higher the amount of marketing information acquired.

(ii) The stronger the ties in the inter-firm networks the more the amount of marketing information acquired.

(iii) The larger the number of actors in the inter-firm networks the higher the amount of marketing information acquired.

The multiple regression analyses together with the support of stepwise approach were used in the analysis.

[§] Standard errors estimate how much the regression coefficients will vary between samples of the same size taken from the same population

Multiple regressions

Model fitness

Table 7 below shows the results of testing the fitness of the model which is the extent to which the results are reliable. The R^2 and the F test have been used to test the models. The model displayed considerable explanatory power and it was quite robust. In this particular study, the standardised coefficients of determination R^2 were found to be .159 for model 1 with INTSIZE and .173 for model 2 in the INTSIZE and INTEDENS. Further test of the model fitness constituted the F- test. This was used to measure the overall significance of the estimated regression line (Gujarati, 1992). It basically tests the significance of R^2; that is whether R^2 is significantly different from zero. The model fitness proved to be good at 1% both when inter-firm size (INTSIZE) was the only independent variable and when both size (INTSIZE) and inter-firm density (INTDENS) were considered. The F values findings of 39.841 for model 1 and 22.490 for model 2 show that R^2 is statistically significant since the F values is far from zero. The standard errors of estimates are also low suggesting more reliable prediction. The results were therefore statistically significant taking into account our sample size and number of independent variables used for the study (Hair *et al.*, 2006). The model can therefore best explain the data.

Table 7: Tests for model fitness of the inter-firm typology

MODEL	R	R SQUARE	ADJUSTED R SQUARE	STD ERROR OF THE ESTIMATE	F VALUES	Sig.
1	.404[a]	.163	.159	.36755	39.841	.000
2	.426°	.181	.173	.36447	22.490	.000

[a]: Predictors (Constant), INTSIZE
° Predictors (Constant), INTSIZE, INTDENS

The strength of ties variable was excluded from the final model for not meeting the minimum criteria established by the stepwise method.

Multiple regressions using the stepwise approach

As it may be recalled, the correlations analysis showed that all the three constructs of the inter-firm networks had significant positive relationship with the inter-firm marketing information (INTEMI). However, the stepwise approach excluded the INTSTTI as an important contributing factor in the marketing information acquisition. Table 8 below depicts results which indicate that the inter-firm size (INTSIZE) has the most predicting power to the inter-firm marketing information (INTEMI) acquisition. The beta value indicates that the relationship is statistically significant at .404 when it stands alone. But when combined with density of inter-firm (INTDENS) the beta

values for inter-firm size (INTSIZE) become lower at .392 while the density has the beta value of .135. This shows that only two of the three independent variables contribute significantly to prediction of the inter-firm marketing information (INTEMI).

The VIF which measures the problem of multicollinearity stands at 1.000 for INTSIZE (inter firm size) in the 1st model and 1.008 for INTDENSI and INTSIZE combined in the 2nd model. In this particular study, the VIF was 1.000 in the first model and 1.010 in the second model. This means the effect of multicollinearity is very insignificant as these values fall very far from the maximum of 10 as suggested in the rule of thumb (Cooper & Schindler, 2003). In both cases the VIF falls within an acceptable range, which should be at most 10.

In this particular study the tolerance is 1 for INTSIZE in the first model and .992 for both the INTSIZE and INTEDENS in the second model. Both of these are by far greater than .1 suggesting that the models are free from problem of multicollinearity.

Table 8: Coefficient tests for the INTEMI

	Model	Beta(ß)	T	Std Error	Sig.	VIF	Tolerance
1.	(Constant)	.404	13.582	.174	.000	1.000	1.000
	INTSIZE		6.312	.044	.000		
2.	(Constant)		11.238	.194	.000		
	INTSIZE	.392	6.145	.044	.000	1.008	.992
	INTEDENS	.135	2.112	.035	.036	1.008	.992

Conclusion

The output in Table 8 indicates that there are positive relationships between the size, density and strength of ties with the inter-firm marketing information. The standard errors are also low for each variable. However, only two constructs of the inter-firm size and density of networks showed statistically significant contributions to the marketing information accessibility. The beta coefficients (ß) show the relative contribution of the two independent variables to the explanatory power of the regression equation. Consequently, the hypotheses on inter-firm typology are supported except for strength of ties whose predictive power is lower. The first model shows the constant and a variable of inter-firm size. The second model on the other hands adds the inter-firm density variable to the size variable. The strength of ties was automatically excluded from the regressions because of insignificant contribution it has to the marketing information gathering. The regression coefficients of the remaining two variables are judged significantly different from zero. The independent variable of inter-firm size influences marketing information most, followed by the density of the inter-firm network. These results suggest that improving the size and density of inter-

firm networks an SSE entrepreneur may not need to invest on strength of ties before significant change is realised in the marketing information acquisition.

CONCLUSION AND IMPLICATIONS

The point of departure in this study is the contention that marketing information resource acquisition is indispensable for the SSEs survival and prosperity especially in the current competitive world. Accessing such resource through formal researches appeared to be less preferred to networks, in this study. The networks within which entrepreneurs and their organisations are embedded are found to provide accurate information, which can be used to make marketing decisions and evaluate the validity of the decisions. Over 70% of the respondents preferred networks to marketing research in acquiring the marketing information for their firms. But acquisition of such resource requires investment in governing the relationship with various actors. Unfortunately, SSEs entrepreneurs are characterised by restricted time and resources (Shaw & Collins, 2001) forcing them to invest in most beneficial networks. Investing in quality networks (entrepreneurial networks) is therefore imperative to make best use of the networks. Various empirical work and theories including transaction cost, social exchange and social network theories were used to develop the 6 hypotheses used in this study. These hypotheses provided the framework for the details of what was investigated in the study. The insightful purpose of the study was to examine the influence of density, strength of ties and size of both inter-firm and social networks on the marketing information acquisition. Our findings have revealed that differing characteristics of networks have had differing impact on the marketing information accessibility. The salient properties differed depending upon whether the typology in question was inter-firm or social network. The density and strength of ties were the most important predictors of the **social networks** marketing information. Size was found to have a positive relationship but not statistically significant. So it was excluded from the equation leading to marketing information acquisition by social networks. This means that SSEs have to invest their limited time, money and energy to improve the levels of density and strength of ties of social networks. As far as the **inter-firm** dimension is concerned, two properties have been found to be significantly instrumental in the marketing information accessibility. These are the size and the density of networks. The strength of ties had positive effect but its contribution to the inter-firm marketing information was less significant. The strength of ties was thus excluded from the regression equation leading to the acquisition of the inter-firm marketing information. The exclusion of the size and strength of ties attributes from the social and inter-firm marketing information respectively meant that their further inclusion in the model would be superfluous. The results affirm that when SSEs consider governing the inter-firm network dimension they have to invest their time, money and energy on increasing the size and density of inter-firm networks as a strategy to raise the amount of marketing information needed for their effective performances.

Overall, this research has managed largely to confirm the arguments put forward by others rather than dispute them. It is nevertheless important to use these results with caution as there is a need for further empirical evidence before we could confirm any causal relation. This is because the mere fact that variables are correlated does not necessarily guarantee a causal relationship. The existing theories however provide substantial guidance to improve our probability of being right.

Managerial implications

The article indicates that networks for small manufacturing firms can be a very cost-effective way of improving their marketing information acquisition. Networks can provide a valuable source of information through the use of both inter-firm and social networks. It has been postulated that networks will enable business regardless of size to combine resources, skills and information to achieve results not possible through individual independent efforts. It is implied in this article that investing in networks is instrumental to the access of marketing information by the SSEs. SSEs entrepreneurs should take initiatives in establishing their networks and devote considerable time to establish and maintain personal and inter-firm networks. People learn from each other. Networks facilitate the learning and acquisition of resources at affordable costs. SSEs should undertake strategic investment in both social and inter-firm networks so that they could use these as a route for acquiring needed knowledge required to survive in rapidly changing and highly competitive markets.

As far as the inter-firm networks are concerned, emphasis should be placed on their size and density properties. There is less emphasis on strength of ties since many firms that interact amongst themselves may not necessarily have originated from a very close relationship, intimacy, duration of relationship or else frequency of interaction. This is practically so because the relationship with these other firms may have been triggered by more direct business motives rather than otherwise. Such relationships may have arisen from getting supplies on time, on credit and even most reliably. We think that this endeavour may partly be facilitated by delegating networking responsibility and authority to colleagues in the firm (Ostgaard & Bilkey, 1996). Efforts should be directed at making each employee in the organisation invest time, resources and energy into networking. In this way the needed size and density of inter-firm contacts could be realised. Firms should be able to improve their size of actors and density by interacting with other firms whether large, small, competing or non-competing. It is also possible to increase the size and density of the inter-firm networks through joining various business related associations.

The results from this study indicate that the social network connectedness (density) gives access to most social network information. There is a need therefore to invest time, energy and resources amongst the SSEs to develop more connected network and improved strength of ties. This would mean inviting members in social-based associations to different social functions and even develop personal relations based activities. Through these forums people would become known to each other and also

improve their closeness, frequency of interaction and sustainability of their relationship – all being instrumental to boost density and strength ties of social networks.

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