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**Use of Networks by Incubator Tenants to Acquire Knowledge to
Create Businesses in University Incubation Centres in Kenya**

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Abstract

The purpose of this paper is to analyze critically the Use of Networks by Incubator Tenants to Acquire Knowledge to Create Businesses in University Incubation Centres in Kenya. The methodology for the study is mixed methods including Document analysis, interviews, administration and analysis of questionnaires to obtain data from incubation centres in Kenyatta University and Strathmore University. The study revealed that the tenants of incubation centres relied on internal networks comprising of other tenants, academia and alumni to acquire and use knowledge for their businesses. External networks were organized on need basis by the incubation centre and therefore knowledge acquisition from such networks was only to a limited extent. The paper has significant theoretical, policy, and practical implications. From a theoretical perspective, the study finds that tenants in university business incubation centres have a high propensity for informal networks as opposed to the formal networks set up by the management of incubation centres.

Keywords: *knowledge networks, university incubation centres*

Introduction

Knowledge is a vital concept in today's incubation centres especially in the light of on-going transition from production-based society to knowledge based society. The main mission of university incubation centres in the current knowledge era is to empower tenants to acquire and apply knowledge for creating and sustaining businesses. University based incubators are also known as academic incubators, science parks, research parks or technology parks and have the main aim of producing successful businesses that venture out of the incubation program ready to operate independently (National Business Incubation Association, 2014).

This is done by offsetting the knowledge shortcomings that result from the liability of smallness and newness of young business firms. By providing opportunities for interaction and sharing through social networks, business incubator management in universities can use their networks and business support services to enhance knowledge acquisition of young firms and enable them to operate successful businesses (Khalid et al,2012).

Based on the amount of social capital that firms acquire which is relevant to the identified business opportunity, they may then develop goods and services that allow them to achieve different levels of business performance (Isabelle, 2013). This is because business and market knowledge which is earned from business incubators ensure growth and survival of young firms (World Bank, 2016).

Review of Literature

Today's businesses are faced by complex changing environment. Young entrepreneurs are not only facing the dilemma of shortage of business skills, but also finding the right knowledge from the right networks.

Knowledge is a key resource for creation of new businesses (Colombo et al, 2010). The term resource refers to different things to different people. In this study a resource refers to something that can be used to increase wealth.

Incubation centres are considered to be the resource centres in universities in that they act as knowledge repositories, where knowledge is acquired and applied in starting and sustaining businesses.

Whereas young entrepreneurs have in the past relied on library information resources to acquire knowledge, a necessary network of business and professional contacts is lacking from such knowledge sources.

This study intended to investigate how social interactions inside and outside an incubation centre helps incubator tenants in acquiring knowledge from different networks in order to create businesses. On the above note, social networks are important in that they not only help entrepreneurs to acquire, interpret and contextualize new knowledge but they assist them to apply it in order to start and sustain a business (Nonaka and Takeuchi, 1995).

To support that, Lyons (2000) refers to the provision of an opportunity for networking as the most important service offered by incubators. Related to this, Uriarte (2008) indicates that 42% of the knowledge resources in an organization are held in the members' brain. It is because of this reason that incubator managers are regarded as intermediaries between the incubator tenants and the knowledge that they require to satisfy their individual needs (Grimaldi and Grandi, 2005). The tenants in the incubator are also allowed to hold discussions on general issues that affect them. In the process of interacting with each other they also share what they know with other tenants (Bøllingtoft, 2012).

In many developed countries the use of both internal and external networks to acquire knowledge in university incubation centres has been acknowledged. This argument is supported by Kumar and Kumar (1997) who showed the merits of locating the incubator within the environs of an institution of higher learning and argued that tenants make use of social capital from academic networks (Grandi and Grimaldi, 2005). Related to this, respondents in a

Canadian study by Sá and Lee (2012) established that incubator networks create an enabling environment of knowledge acquisition that can lead to creation of successful businesses. This is because expertise knowledge which is acquired from incubators is vital in the sustenance of businesses. In support of this Laursen and Salter (2006) indicates that 66% of UK manufacturing firms had used their clients or customers' networks as sources of knowledge for product and service innovation. Customer knowledge can come from diverse sources such as suppliers, partners, competitors and customer experiences (Garcia-Murillo and Annabi, Dalkir (2005).

However, the above observations are contrary to what Chan and Lau (2005) established after evaluating six incubation centre programs in Hong Kong Universities; among incubation centres that were involved in the study, only one showed evidence of knowledge acquisition from its customers. Similarly, Hite (2005) and Fischer and Reuber (2003) supports the above argument by noting that although knowledge acquisition from customers is vital, it is unwise for young firms to rely so much on other firms because they lack sufficient knowledge resources to cater for their needs. This is evident in Social Capital Model which suggests that strong ties exist between people who already have similar information and qualities (Nahapiet and Ghoshal, 1998).

However, the case is different in a country like India, where a study by Sangeeta and Meenu (2011) indicates that women relied on information from other entrepreneurs to start and grow their businesses. Women also took advantage of strong ties which they had built over a period of time to access financial resources from micro-finance companies. This is also evident in a study conducted among US and Mexican students in 2006. The findings of the study indicated that mentors who run successful firms influenced young entrepreneurs to operate firms that recorded high growth rate (Van Auken et al., 2006).

In many developing countries the use of internal and external knowledge networks to bridge the knowledge gaps of entrepreneurs in an incubation centre has been recognized. Experience in South Africa shows that for a university incubator to succeed it needs certain important characteristics namely: provide entrepreneurship leadership, develop and deliver value to tenants, have a rational tenant selection system and lastly assist tenant firms access finance, human, networking and mentorship resources (Kirsty, 2010).

Related to this, Adegbite (2007) indicates that incubators require professional management that can assist tenants to acquire knowledge through networks that are offered through the incubator managers. This is evident in a study conducted in Uganda by Ikoja -Odongo and Ocholla (2004). They established that personal contacts, friends and family members were ranked highest as sources of knowledge for young informal sector entrepreneurs. Although these networks are informal in nature, university incubation centres also connect their clients to formal networks which deliver value to young entrepreneurs.

However, Ebbers (2013) observes that the degree of collaboration in the university incubator influences the way firms make use of the knowledge they acquire from other firms. This is supported by Wachira, Ngugi and Otieno (2016) who explored entrepreneurship growth in university incubation centres and the part social networks play in ensuring its growth.

The study involved a sample population of fifty nine (59) incubator tenants who had graduated from university incubation centres. Incubator tenants from Six (6) different university incubation centres in Kenya were involved in the study. 68.8% of the respondents indicated that the number of social network ties one has influences growth and survival of business. 51.1% of the respondents indicated that the more frequently one interacts with the social network the higher the probability of business success.

Table 1: Total Number of Graduated and Incubated Tenants

S/No	University	Incubator	Number of Graduated Incubator Tenants(2016)	Number of Incubated Tenants (Numbers likely to change)
1.	Strathmore University (SU)	iBiz Africa – Incubation Centre	10	40
2.	Kenyatta University(KU)	Chandaria Business Incubation Centre	25	98
3.	University of Nairobi(UON)	C4D Lab Incubation Centre	6	20
4.	Mount Kenya University (MKU)	Incubation Centre	6	10
5.	Technical University of Kenya(TUK)	Business and Technology Incubation Unit	7	10
6.	Kenya College of Accountancy University(KCA)	Business Incubator	5	25
	TOTAL		59	203

Findings

The research was interested in determining the extent to which incubator tenants developed networks in the university incubation centre with the aim of acquiring knowledge in order to create businesses. The researcher wanted to find out the level of development of networks by incubator tenants in order to understand the measures that universities have put in place in their endeavour to promote knowledge acquisition and use to create businesses through university incubation centres in selected universities in Kenya. Table 2 illustrates the response.

Table 2: Development of Networks

Network	Frequency	Percentage
Self-organized networks	23	47.9
Incubation centre management	15	31.3
Both	10	20.8
Total	48	100.0

Table 2 indicates that, almost half of the respondents (48%) developed through self-organized networks. More than a quarter of the respondents (30%) indicated that they developed networks through incubation centre management, while slightly more than a fifth of the respondents (20%) developed networks through the two

methods. The findings implied that incubator tenants relied mostly on self-organized networks to acquire knowledge resources.

This meant that most of the businesses that were incubated were start-ups. These incubator tenants usually begin with informal networks comprising of fellow tenants, friends and family members. This is evident in a study conducted in Uganda by Ikoja -Odongo and Ocholla (2004) which established that personal contacts, friends and family members were ranked highest as sources of knowledge for young informal sector entrepreneurs.

However, these findings are contrary to that of Bekkers et al., (2006) who noted that incubator tenants usually begin with interpersonal networks that are academic in nature. Although these networks are informal in nature, university incubation centres also connect their clients to formal networks with venture capitalists, banks, accountants, creditors, lawyers and trade associations which deliver value to young entrepreneurs. This is confirmed by Lyons (2000) who refers to the provision of an opportunity for networking as the most important service offered by incubators.

Nonaka and Takeuchi (1995) argue in a similar fashion by asserting that, social networks are important in that they not only help entrepreneurs to acquire, interpret and contextualize new knowledge but they assist them to apply it in order to start and sustain businesses.

However, the prevalence of self –organized networks means that knowledge shared among incubator tenants is general in nature and may not necessarily be applied in the creation of businesses.

Previous research by Masutha (2014) indicates that, in circumstances where the incubator manager is unable to provide knowledge directly, he/she should be at a position of linking the tenants with other knowledgeable individuals outside the social structure of the incubator. These networks are the ones that bridge the knowledge gaps of the incubator tenants.

Zhang and Sonobe (2011) supports this by indicating that Incubator managers act as knowledge providers and mediators and are expected to provide incubator tenants with network contacts that can help them acquire knowledge resources.

A strong mix of academic and industry players provide the necessary knowledge resources to create successful start-ups. In connection to this, Canadian study by Sá and Lee (2012) reported that the social networks of incubators may be a source of networking opportunities that can translate into business opportunities. This is supported by Setyawati, Shariff and Saud (2011) who studied what makes successful entrepreneurs in Indonesia; they observed that besides learning, the entrepreneurs should also be able to open or to have internal networking within their enterprises or external networking with other parties including individuals and existing firms.

Research findings by Chandra and Silva (2012) confirmed that knowledge networks should emanate from the incubation centre management. Whereas Incubates start out with interpersonal networks that are primarily academic in nature prior to forming non-academic network: incubator management takes the position of an intermediary, helping the tenants to establish contacts to incubator external networks in order to gain access to resources and knowledge. New knowledge is acquired when incubates interact with external sources of knowledge.

Interviews with incubator managers revealed that the networks that were organized by the incubator management complemented the knowledge acquired from self-organized networks in order to offset the knowledge shortcomings of the tenants. The presence of experienced and successful business people in external networks leads to knowledge acquisition which results to creation of successful businesses.

To this end, networks have to be aligned with changing needs and expectations of the incubator tenants; and as firms grow they need to switch from informal networks to formal networks. By connecting with new external networks, firms are able to increase their chances of survival. However, for better chances of business survival, firms are required to maintain their earlier developed networks in order to build new ones.

The Strength of Relationships in the Network (s)

The researcher wanted to know the kind of individuals who were involved in the networks that were developed by incubates and the incubator management and whether the relationships were weak or strong. Table 3 shows the response.

Table 3: The Strength of Relationships in the Network (s)

Individual	incubator tenants		incubation centre staff	
	Frequency	Percentage	Frequency	Percentage
Incubator tenants	12	25	3	33.3
Incubator managers	10	20.8	2	22.2
University lecturers	8	16.7	1	11.1
Successful business people	5	10.4	1	11.1
Family members and friends	8	16.7	1	11.1
Customers and suppliers	5	10.4	1	11.1
Total	48	100	9	100.0

Table 3 shows the strength of prevalent networks among the tenants. A majority of respondents rated networks with incubator tenants as being the strongest (29%). Networks relationships with successful business people and academia were rated lowly at 11% and with University lecturers being rated at 14%. This has the implication that the networks only spawned existing knowledge acquired among the incubation centre tenants. The expertise knowledge from the industry was low. This implied that the tenants are unable to develop strong ties with the most important individuals in industry and academia. Their knowledge is vital for the wellbeing of their business. Social Network Theory as proposed by Nahaphiet and Ghoshal (1998) acknowledges that knowledge acquisition and use is not done in isolation but in the context of networks.

Incubator management is required to take the position of an intermediary, thus helping tenants to establish contacts with successful business people and academia in order to gain access to knowledge. Therefore, this meant there was likelihood that their business failed due to shortage of expertise knowledge from industry players. The industry specific knowledge was needed to be injected into these impoverished networks to make the incubation process meaningful and successful. Networks with Incubation centre managers was rated at 20.8%.

Building on the works of Aarstad (2014), expertise knowledge from incubator centre networks which is directed at addressing the specific knowledge needs of incubator tenants is regarded as the most important resource for a business start-up.

Interviews with incubation centre managers agreed with the findings of this study that incubator networks with industry players were weak. The incubation centre managers attributed the weak networks to the fact that there was a weak linkage between university incubation centres and the industry. The other issue affecting the strength of networks is that the incubation centres did not have a clear policy on the management of network for optimization of the networking experience. This meant that context specific tacit knowledge from the industry was lacking and this resulted to business failure.

The findings also revealed strong network ties among incubator tenants. This implies that they shared knowledge amongst themselves. However, Bøllingtoft, (2012) has a contrary opinion regarding this and asserts that a network made of homogeneous ties will be of little value to young entrepreneurs. In order to promote access to knowledge resources, weak ties are more likely to assist inexperienced entrepreneurs by providing links to organizations and people who have valuable information and resources regarding the growth and survival of businesses (Zheng, 2010).

Grimaldi and Grandi (2005) assert that the key factor in acquisition of expertise knowledge for incubator tenants is the search for optimal mix of both strong and weak ties. However, strong ties comprising of family members, friends, peers and acquaintances are very crucial sources of knowledge at the inception stage of a business start-up.

Benefits that Accrue from Networks

The respondents were requested to rank the benefits that accrue from networks in order of importance. Figure 4.3 illustrates the response.

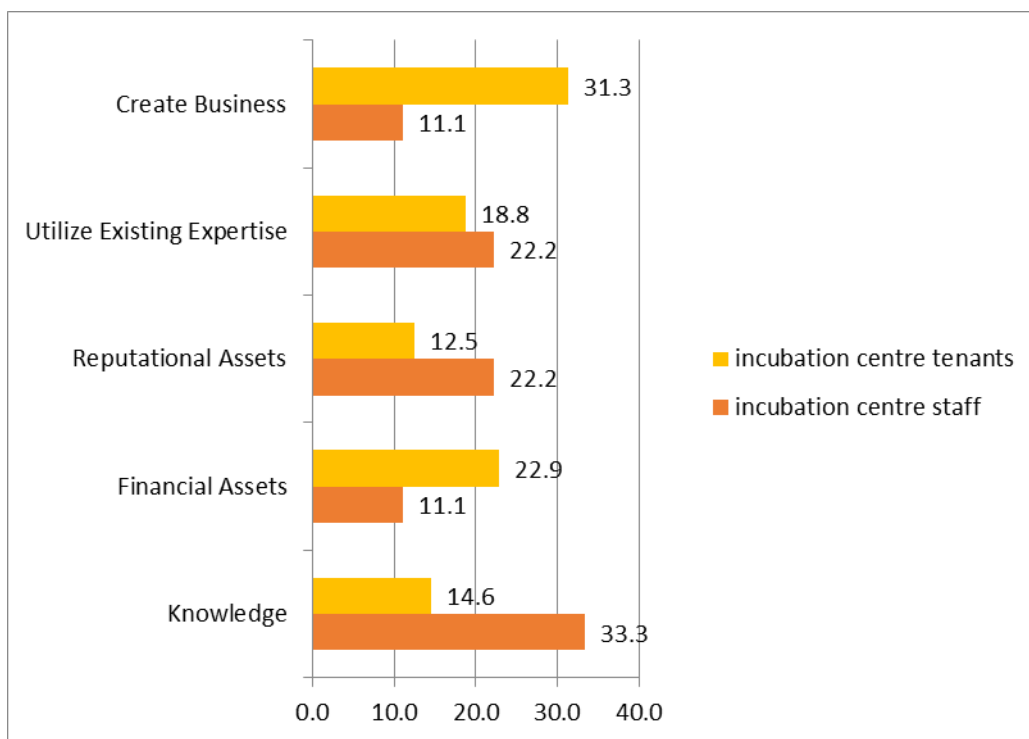


Figure 1: Ranking of Benefits that Accrue from Networks

From the research findings above, respondents ranked the benefits that accrue from networks in order of importance as follows: knowledge was ranked at 24%, creating businesses 22% and Utilization of existing expertise was rated at 20.5%. Reputational assets and sourcing for financial assets were ranked at 17.5% and 17% respectively.

Knowledge was ranked highest benefit that accrued from networks. This implies that, creation of successful businesses is influenced by acquisition of expertise knowledge from internal and external networks that are created by incubation centre.

These findings are in support of Social Network Theory by Nahapiet and Ghoshal (1998) which advocates for use of social network to acquire expertise knowledge that can be used to create sustainable businesses. Previous research has indicated that successful conversion of expertise knowledge into innovative products and services is what gives start-ups a competitive edge.

Whereas networks created in the incubation centre are both strong and weak, knowledge sources are many and there are several direct and indirect knowledge acquisition opportunities present. (Slotte-Kock and Coviello, 2010). As indicated by Studdard (2008) the role of an incubator is to act as a mediator between incubator tenants and external actors (Studdard, 2008).

Depending on the knowledge needs of the tenants, if the incubator manager is unable to provide knowledge directly, he/she does possess the ability to link the tenants with other actors outside the social structure of the incubator (Hansen et al, 2000). This is because business is a dynamic entity and it needs to continuously generate new innovative products for it to survive.

Adequate support of start-up firms is important for commercialization and economic growth. University incubation centres supplement government activities in job creation and economic development. This move is aimed at empowering students to be self-employed upon graduation, thereby reducing pressure on ever thinning employment space.

Creation of businesses is ranked at 22% as a benefit that accrue from the incubation centre. This comes as the end product after tenants identify opportunities and assembles all the necessary resources. This also implies businesses in this category were up and running but were experiencing shortage of resources which incubation centres could adequately meet.

Incubation centres are believed to offset the resource shortcomings of start-up businesses in order to cushion them against failure. This is the category that could have joined the incubation centre to utilize existing expertise which is rated at 20.5%. This is because business advice from successful and experienced business people is indispensable at each stage of business for faster problem solving. Shortage of finances to expand their businesses could have pushed them to join incubation centres.

However, it is worth noting that respondents who joined incubation centre programme to source for finances were ranked at 17%. This category of incubator tenants may not necessarily have the knowledge required in creating businesses. Whereas Knowledge resources are believed to offer firms competitive advantage, finances are equally important in the growth and survival of businesses.

Experience in South Africa shows that for a university incubator to succeed it needs certain important characteristics namely: provide entrepreneurship leadership, develop and deliver value to tenants, have a rational tenant selection system and lastly assist tenant firms access finance, human, networking and mentorship resources (Kirsty, 2010).

However, previous research has established that putting more money into start-ups is more costly than helping already established businesses due to liability of smallness and newness of the later. This is why incubation centres prefer admitting businesses that have high growth potential, which are capable of standing on their own even after venturing out. Kirsty (2010) identifies access to finance as the greatest challenge faced by entrepreneurs prior to joining incubation programs.

This is especially challenging when finances are sourced from financial institutions due to lack of collateral. However, contrary to the belief of many incubator tenants, access to business networks enable entrepreneurs to succeed, even if they have limited access to funders. This is because knowledge as a resource is key to creating successful businesses. Previous research has also shown that world's most successful companies are valued for their knowledge not their capital assets.

In support of this, a research on evaluation of the SMEs Solutions Centre in Kenya indicates that injection of seed capital is not necessarily a panacea for growth of SMEs at the early start-up phase (Maina et al, 2012).

17.5% of the respondents indicated that they benefited from the reputational assets of the incubation centre. This argument is supported by Kumar and Kumar (1997) who showed the merits of locating the incubator within the environs of an institution of higher learning and argued that tenants make use of social capital from academic networks (Grandiand Grimaldi, 2005).

Other than creation of networks with faculty members, affiliation to university incubation centre gives their businesses credibility and help entrepreneurs to get customers. Incubator tenants knowledge assets and research and technology environment that universities offer.

Universities not only act as main sources of tacit knowledge, they create knowledge spill-overs, both by generating new technologies and assisting private organizations to commercialize them.

This implies that most businesses in this category were start-ups that were owned by students who were also pursuing other academic programmes. This is because most established businesses already have a name for them and may not necessarily join university incubation centres to source for reputational assets. However, other than reputational assets, incubation centres create avenues for connecting with suppliers, customers and future employees. However, whether incubators connect them to investors, venture capitalists and private funders, their businesses may eventually fail due to lack of knowledge resources. Knowledge resources are key to the growth and survival of businesses.

Conclusions

The study sought to determine the extent to which incubator tenants used networks to acquire knowledge in order to create businesses in university incubation centres in Kenya. The results obtained from the correlation model showed a weak but positive correlation between use of networks and business creation (Person correlation value = 0.205 significant value =0.01).

The study prediction results obtained from the regression model also revealed that a unit increase in use of networks would enhance business creation by a factor of 0.043 units. Results obtained from descriptive statistics showed that use of networks affects business creation to a great extent. The study noted that most networks were self-organized by incubator tenants and therefore a strong mix of both self-organized and incubation centre networks were vital in the acquisition of expertise knowledge required in the creation of businesses.

The findings also showed that creating business was the highest ranked benefit that accrues from networks. These findings are contrary to the goals of incubation centres in that they are knowledge repositories that are meant to offset the knowledge shortcomings of the incubator tenants. Application of expertise knowledge is what results in business creation.

The study findings obtained from the correlation model showed positive correlation between use networks and business creation. The results obtained from the regression model also revealed that networks enhance business creation.

Results also obtained from descriptive statistics showed that use of networks affects business creation to a great extent. The findings are in line with the research by Sá and Lee (2012) who established that incubator networks create an enabling environment of knowledge acquisition that lead to creation of successful businesses. This study therefore concludes that the use of networks by incubator tenants influences business creation.

Recommendations

The study recommended that, other than hiring incubator managers and staff who are qualified, regular training of incubation centre managers and staff is also important to ensure that they add value to tenants through providing them with appropriate knowledge and networks that meet their needs.

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