Informal Knowledge Institutions and Market Innovation by Knowledge-Intensive Businesses

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Abstract

This study aims to investigate the influence of informal knowledge institutions on new market innovation in a developing economy. A framework is built in which small firms develop new market innovations through utilizing knowledge acquired from informal (e.g. personal contact, network of friends, families etc.) institutions. Data was collected through a survey of 510 small and medium sized enterprises (SMEs) in knowledge intensive business (KIBS) sector of Lagos, Nigeria at firm level. The findings suggest that the informal sources is more accommodating to the needs of small firms in a developing economy and serve as the primary source of knowledge resources for new market innovation. Thus, the informal system should be recognized as an important part of the institutional system influencing innovation in developing economies. We recommend the need to revise the policy to provide direction by providing necessary structure should be given to the informal institutions as they are becoming a focal point in the developing economies.

Introduction

Institutions provide a combined web of supportive organizations, such as educational institutions, Chambers of Commerce, training agencies, government agencies and informal actors that generate the new knowledge needed for innovation (Keeble *et. al*, 1999; Li and Matlay, 2006). Several empirical studies in advanced economies suggest that firms' institutional environment has a positive effect on their innovative activities (Keeble *et. al,* 1999; Capello, 1999; Acs, 2002). Much progress has been made in advanced countries in understanding the institutional determinants of innovation (Stuart and Sorenson, 2003; Acs, 2002) but for developing countries, despite the contrast in the institutional setting, there is still lack of research on the effect of informal institutional factors specifically on 'new market innovation' by Knowledge-Intensive Business Services SMEs.

Therefore, this study employs Schumpeter's theory of entrepreneurship with a focus on the 'innovation' concept (Schumpeter, 1996) in Knowledge Intensive Business (KIBS) firms. Schumpeter, nevertheless, considers the entrepreneurial innovation as new combinations that includes introduction of a new product, a new process, opening of new market , development of new sources of supply of raw materials, and a new form of organization as the propeller of the capitalist system (Schumpeter, 1934). Thus, new market innovation is about entering a new or existing market (Klepper and Thompson, 2006) aimed at better addressing customers' needs and increasing firms' credibility. For example, IT products produced using 'new' technologies with improved performance (faster, waterproof) are product innovations. However, the first introduction of 'existing' IT product into a new market like a product existing in Germany being introduced for the first time into the Nigerian market is a new market innovation. Therefore, it is a unique innovation because it signifies the exploitation of existing products into new markets, so that SMEs can capture more market share, growth in size and improved profitability (Feeser and Willard, 1990; Klepper and Thompson, 2006).

The polarization of Institutions into formal and informal (North, 1991) is more predominant in the developing economies. Formal knowledge institutions refer to seeking knowledge from institutions and organizations recognized by law, such as higher education institutions, research institutes, and formal collaborations with other KIBS firms(Muller & Doloreux, 2007). Informal knowledge institutions in contrast refer to acquiring knowledge for innovative activities outside formalized method that are not supported by the law (Taylor and Thorpe, 2004) though they are not illegal. These informal sources of knowledge for NMI could be through feedbacks from lead clients that include exchange of technical knowledge and salient information about market conditions and trends of need for a NMI. Suppliers of equipment and materials, (Scarso and Bolisani, 2012) that offer essential insight into the organization of information, logistics and

other functions for market innovation. Also, personal contact on the internet or face-to-face questioning or administering questionnaires (Pedersen *et. al*, 2002) with respect to acquisition of knowledge for NMI; imitation from other competitors (den, Hertog,2000) with some amendments to such initiative so as to make a difference and local linkages (Pedersen *et. al*, 2002) through friends, relatives and club/tribal members. The concept of kinship ties, both strong and weak ties may be relevant. The players are willing to invest necessary information in the entrepreneur for the benefit of NMI. These knowledge types are used by many knowledge intensive business firms globally because they attract less to nothing transactional cost in comparison to the tremendous benefits obtained from it (Adeyeye, 2013). Therefore, this research addresses the question: Does the informal knowledge factor influence new market innovation by SMEs in knowledge-intensive sectors of a developing country? To this end, this hypothesis was formulated for testing.

Ho: There is no significant relationship between the use of informal institutional sources of knowledge and newmarket innovation by KIBS SMEs in a developing economy.

Materials and Methods

The study was carried out in Lagos as the economic, financial and commercial capital of Nigeria with population of approximately 10.6million capturing almost 36.8% of the entire country (National Statistics Bureau, 2014). This study employs a quantitative approach using survey to obtain numerical data because secondary data sources will not provide direct information on firm's situation. Our unit of analysis is the 'firm level', as used by most previous authors that studied new market innovation (Ayyagari, Demirgüç-Kunt and Maksimovic, 2010). A questionnaire structured according to those from earlier studies on knowledge and innovation (i.e. Feeser and Willard, 1990; Svetina and Prodan, 2008) had been adopted. It was constructed and designed to elicit specific information from entrepreneurs, in conjunction with the research objectives and hypotheses. Each item has ten responses in which respondents have to indicate: (0) Not Applicable, (1-10) 'Not Important at all' to 'Very Important'. The highest is ten while the lowest is zero points respectively. The result will be presented at

P<.05 which is the normal significant level of such studies like this.

Sample and Sampling Technique.

1782 SMEs that fell into the selection criteria of KIBS: SMEs with employees below 250 and have existed for 20 years or below as pertinent to innovative firms were used for this evaluation. Random sampling method was employed in order to enable every case an equal opportunity to be selected. 891 samples were used for data collection between December, 2011 and March, 2012 for a period of five years (2006-2011). 510 respondents were valid for analysis which accounted for 57% of the samples. Thus, it can be classified high enough for generalization. The data was analyzed using Descriptive Analysis, Principal Component Analysis, Pearson-Moment Correlation and Multiple Regression.

The Dependent Variable: New market innovation.

To measure new market innovation, respondents were asked to indicate the numbers of new markets opened between 2006 and 2011 which was considered a useful measure of new market innovation. Firms with not applicable (N/A) in any year are rated '0' while those with number(s) of new markets scored '1'. Furthermore, Liebermann and Montgomery (1998) argued that newness of a product is one of the significant variables to gain acceptance in marketplace. Hence for the purpose of elaborations and enhancement, 7 variables were employed to describe 'newness' in terms of market innovation as commonly used in a number of innovation studies as a measure of innovative activities.

Independent Variable: Informal Sources of Knowledge

The independent variable is the informal institutional sources of knowledge. The respondents were required to rate the importance of informal sources of knowledge for entering into a new market during 2006-2011. The knowledge sources covered were defined based on Pedersen (2002) and Svetina and Prodan's (2008) studies on internal and external sources of knowledge contribution to firms' innovation performance. The informal sources contained 14 items designed to elicit information to measure sources of external

knowledge resources used for new market innovation.

Results and discussions

Descriptive analysis

Table I depicts the new markets opened during the years by Knowledge-Intensive Business SMEs ranged between 1 and 85.

Descriptive analysis describes the general pattern of innovativeness of the firms.

Table I: Analysis of Market Innovation between 2006 and 2011.

	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011
Mean	4.7	5.9	7.1	7.3	9.1
Median	2	3	3.5	4	4
Minimum	1	1	1	1	1
Maximum	57	85	75	72	85

This revealed that the KIBS SMEs are innovative as they expand into new markets which agrees with the findings of Abubakar (2013). However, most of the respondents stated that the restrictions on new market innovation have been attributed to the dearth of finance and knowledge acquisition. Thus new market innovation is an acceptable measure for this study.

Principal Component Analysis

Factor analysis as described by Minocha (2005) was used to compress the variables in the questionnaires. This allowed for easy explanation of correlations within the set variables.

Table 2: Results of Factorial Analysis on Variables

	Component			
	1	2	3	4
New Market Innovation				
Newly introduced to the country	0.795			
Newly introduced to the firm	0.815			
Newly introduced to the market	0.771			
New to a group of people as customers /client firm	0.831			
Newly introduced to the environment	0.600			
Improved version of a previous product/service	0.717			
Presented in a different ways from other firms	0.724			
Explained variance by factor 56.9%, KMO.83Chronbac Alpha.86.				
Informal Sources of knowledge institutions				
Learning through Personal Contacts				
Personal connections to known people		0.824		
Personal contact by asking questions, investigations or survey		0.812		
Contact with informants		0.841		
Personal invitation to come over through personal inquiry		0.778		
Interactions with suppliers		0.637		
Explained 47.11% of the variance; KMO.87; Chronbac alpha .88.				
Learning from local linkages				
Information from friends and family members			0.622	
limitation of other competitors			0.847	
Connections from towns meeting			0.874	
Explained 13.14% of the variance (KMO.87; Chronbac alpha .76.				
Learning through Public places and Literature				
Literature				0.860
Webs & Internet				0.859
Interactions at public places like bus stops, market, church, mosques, parks, clubs etc				0.503
Interactions with customers/client firms				0.555
Explained 9.31% of the variance, KMO.87; Chronbac alpha .83.				

The 7 variables for NMI were reduced to one factor which explained a total variance of 56.9% for NMI and Chronbac Alpha 86% depicting the high level of reliability index. Three factors emerged from the 11 response variables of informal sources of knowledge institutions. The first one combined all sources of informal knowledge derived from entrepreneur's contact; we called it 'Learning through personal contact. This factor explains 47.11% of the total variance for Informal sources of knowledge institutions with 88% reliability coefficient. The second factor combined responses from diverse ways of acquiring knowledge for new market innovation through friends, relatives etc. as "Learning from local linkages" explaining 13.11% and 76% reliability coefficient. Lastly, the third factor combined responses on interactions in public places thus called "Learning through public places and Literature" explained 9.31% with Chronbac Alpha 83%.All the factors reliability coefficient is high enough to be considered and the entire factors explained a total variance of the model.

Correlation.

The result of the Pearson's-Moment correlation matrix that identifies the strength

of relationship between these three factors and NMI is shown in Table 3.

Table 3: Correlations between New Market Innovation and other Factors

	NMI	1	2	3	4
Learning through personal contact	.363**				
Learning through local linkages	.326**	0.000			
Learning from public places & Literature	.470**	0.000	0.000		
Firm age	0.035	.158**	-0.059	.169**	-.182**
Size	0.078	-0.027	-0.038	-0.054	0.049

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

This indicated that use of personal contact as a sort of network to access knowledge as well as information from local linkages and public places and literature are positively associated with NMI significantly at P< .01 hence very important for NMI in Lagos. These may be as a result of some complex non-market factor in developing economies (Ayeetey, 2008) where the informal network becomes vital due to some socio-cultural and environmental interaction. Furthermore, the informal knowledge is not available to every firm but only to those who are connected and have the capacity for exploitation.

Multiple regression models

This section reports the explanatory power of the multiple regressions in explaining NMI by the independent variable, informal sources of knowledge. It tested the null hypotheses that, there is no significant relationship between the use of informal institutional sources of knowledge and new market innovation by KIBS SMEs in a developing economy.

Table 4: Regression analysis result for NMI and informal knowledge sources of resources

	Model 1	Model 2	Model 3
Constant	-6.020E17	-.093 -(1.103)	-.104 -(1.290)
Informal Learning from Personal Contact	.156 (3.450) ***	.151 (3.324) ***	159 (3.525) ***
Learning from local linkages	.095 (2.009)**	.093 (1.951)*	.101 (2.135)**
Learning from public places and literatures Controls	.229 (4.863) ***	.220 (4.597) ***	.235 (4.900) ***
Age		.047 (1.233)	.015 (.368)
Size			.104 (2.624) **
R²	.282	.284	.294
Adjusted R²	.276	.277	.285
F	49.589***	40.016***	34.884***

The results in Table 4 suggest that there is an association between informal sources of knowledge and NMI in the three models with all the factors being significant. Thus, the null hypothesis is rejected. The Adjusted R² of 28.5% indicates the percentage being explained by the models while other factors not included in this study will explain the remaining percentages. Although the findings are similar to previous studies (Cohen and Levinthal, 1989; Pedersen *et al,* 2002; Svetina and Prodan, 2008) the 'originality' of this finding is that previous studies did not examine whether informal institutional sources of knowledge are important for NMI by KIBS SMEs in a developing country. Informal sources of knowledge are highly significant (P<.01) with or without controlling for size and age of firms.

This finding appears to support our hypothesis. In advanced economies, formal institutions, particularly educational institutions are considered important contributors to innovation (Acs, 2002; Li and Matlay, 2006) while developing countries often have underdeveloped formal institutional environment especially educational institutions (Acs and Virgill 2010). Sautet (2005) empirically related institutions and the type of entrepreneurship that emerges in different societies especially for developing countries. For example, Sautet (2005) studied the role of institutions in entrepreneurship in Romania, and found that the difficulties experienced by many in the developing countries can be directly connected to deficiencies in their formal institutional structure.

Such weaknesses in institutional environments imply that a large amount of economic activities in developing economies occur through informal sources (World Bank, 2010). This is particularly the case for developing countries in Sub-Saharan Africa, which has the highest prevalence of informal economic activities in the world. Thus, for our research problem, this suggests that informal sources may have great influence for new market innovation. For instance, Scarso and Bolisani, (2012)stated that KIBS SMEs offer valuable elements of technical and application

knowledge to clients while clients also supply knowledge exchange ingredients for designing a successful KIBS solution. Thus, in Lagos, the use of networks through personal contact (with clients, suppliers and so on) and information gathering from public places like parks, mosques, churches, tribal meetings, literature and the Internet are highly significant for NM. The staff capability is positively related to the informal knowledge sources of resources because without it, obtaining external resources from these sources might not be so viable. Lagos infrastructural development formally and informally has an impact on firms' in the city especially KIBS SMEs to take advantage of while opening new markets.

Conclusion

This study has introduced a distinctive institutional perspective of informal institutions that is different from the developed economies context on sources of resources for NMI. It shows that the informal sources seem more accommodating to the needs of the entrepreneurs and thus serve as the primary source of resources for NMP. Networks of relationships are vital to informal sources of knowledge resource. The overall result of this study shows that there is a positive association ($P<.01$) between the use of external knowledge, especially from informal sources and new market innovation by KIBS SMEs in a developing country. It is therefore recommended that the informal system should not be perceived as an agent of necessity but should be promoted as an integral part of the economic system in the developing economies.

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