Investigation of Barriers to SMEs Innovation Capacity in Tanzania: Can Technology and R&D Mitigate Their Effects?

Audrey Paul Ndesaulwa¹, Jaraji Kikula²*, Emmanuel Chao²*

¹Scholars at Mzumbe University, School of Business, Ministry of Finance, Tanzania
²Mzumbe University, School of Business, P. O. Box 16647, Arusha
*Corresponding author: aapksawe@gmail.com

Abstract Small and medium-sized firms have gained increasing attention in the innovation literature. Exactly how innovation occurs in these firms is still rather unknown. This study was conducted on a large number (N=384) of small and medium manufacturing furniture firms in Tanzania. With increasing competition and quickly spreading of knowledge, the future of many businesses depend upon their ability to innovate. However, empirical and environmental scan evidence shows that low technological innovativeness of small and Medium Enterprises (SMEs) in Tanzania. In these firms barriers that cause the SMEs to Innovate was investigated and its effects was tested. The results clearly support that Technology and R&D mitigate the effect. The lack of financial resources was found to be one of the major barriers to innovation for SMEs. More than half of the responding firms reported problems in financing innovation projects. However, when extending the basic model with contextual variables, type of industry and firm size, we did find some support for the relationship between barriers of innovation and financial crisis in SMEs. Despite the fact that innovation is a perfect aspect in SMEs sector globally particularly in Tanzania, there is a little understanding of how these innovat ions affect their business performance. In addition, little integration of innovation and business performance research is found in the country literature. Therefore, the main purpose of this study was to investigate the barriers that cause the SMEs to innovate in Tanzania.

Keywords: innovation, barriers and small and medium (SMEs)


1. Introduction

Small and Medium-Sized Enterprises (SMEs) are crucial economic actors within the economies of nations. They are a major source of job creation and represent the seeds for future large companies and corporations [5,7,34] and [5,27]. It is an observed matter that developed and developing countries focus on SMEs because it is believed that they bring great economic benefits in terms of employment creation and income generation [2,15,18]. In developing countries therefore, SMEs are important not only because they create employment but also because they employ unskilled workers, who are overly abundant in these countries [41,42]. Like many other developing countries, Tanzania has recognized the importance of SMEs for economic development and poverty alleviation. However, most of these SMEs do not survive their second “birthday” because of constraints such as lack of capital, human resource challenges, market-based challenges, unfavourable legal and regulatory conditions, as well as weak institutional regimes [1,20,23]. Despite their contributions to income and employment creation, SMEs in general are currently faced with many problems (Hash business Condition), [36,37,38,39,40].

Therefore, if firms fail to continuously innovate their chances of survival are extremely threatened: “It’s war - innovate or die” [11]. Despite the fact that innovation can solve harsh business condition of SMEs resistant to exist innovate in this sector. Barriers to Innovate in SMEs has been dominant with financial bottlenecks hindered access to external finance, high innovation costs (and therefore) high economic risks [30]. Shortage of and hindered access to qualified personnel, limited internal knowhow to manage the innovation process effectively and efficiently (e.g. missing project management knowhow), Missing market knowhow to meet customer’s needs to enter foreign markets [30].

However, innovation is a difficult process that involves risks that new products, services and technologies fail in gaining commercial success. Barriers to innovation in SMEs have been the object of investigation in a large body of national and international studies; bureaucratic hurdles long administrative procedures restrictive laws and regulations and lack of intellectual property rights. Furthermore, he argues that the availability of skilled personnel and lacking competences for innovation tasks is
a very common barrier for German SMEs. Thus, the objective of this paper is to investigate how competence barriers to innovation are perceived in Tanzania SMEs and what are the consequences these barriers do result in. The study will further suggest ways to mitigate the hindrances to SME innovation in Tanzania.

2. Literature Review

Due to the importance of innovation to sustain competitive advantage and economic growth, the topic has gained the attention of eminent scholars in management and economics. In his study [32] identified innovation as a driver for economic growth and argued that the development of new or improved products will encourage economic growth, rather than adjustments to the prices for the same product. The importance of innovation for businesses is stressed by Kleinknecht, [21] who similarly to Schumpeter [32] argue that innovative firms grow faster. The authors also emphasize that new processes and technologies are associated with better allocation of resources, greater productivity and improved quality of routine work [21]. Firms that undertake innovation activities can 3 usually provide better quality products and/or more favorable prices whilst benefiting from greater growth potential [24].

2.1. Innovation in Small Medium Enterprises (SMEs)

Innovation is just as important in SMEs as in large organizations [8]. Considering, SMEs account for 98% of all enterprises in the European economy, this paper focuses on barriers to innovation in particularly SMEs [13]. SMEs are generally more flexible, adaptable and therefore better able to develop and implement new ideas. Along with simple organizational structure and low risk behavior, equally essential characteristics further facilitate innovative capabilities [16]. Substantial evidence concludes a number of SMEs engage in technological innovations across a variety of sectors and this is the determining factor of their success [16]. On the other hand, although possessing the necessary characteristics that better allow 4 firms to be innovative [6] observe that across various industries innovative potential goes unrealized for some SMEs.

Barriers to innovation in SMEs have been studied in various countries. The two most commonly reported constraints towards innovation are associated with financial and competence factors such as lack of qualified personnel [19]. Additionally to the studies, the research by Davidsson [12] and Hakim [14] focuses on firm growth through innovation. They examine that most small companies experience difficulties in acquiring external financial resources and lack of managerial know-how to manage increasingly complex processes within the company. Moreover, these companies face difficulties to respond accordingly to changes in the market because they often do not have the resources and time to recognize external sources of information and technical competence [12,14]. The more recent studies of 2015 highlighted and demonstrate the relevance of competence barriers in hindering innovation in the period after the financial crisis, also in leading countries such as Sweden and Germany.

2.2. Competence Barriers to Innovation in SMEs

Both large and small organizations face financial barriers to innovation. However, small enterprises predominantly experience shortages of qualified personnel for innovation projects [19]. Non-innovative firms generally do not perceive barriers to innovation as intense in comparison to innovative firms SCB [31] and Tourigny [35] research highlights shortages of skilled personnel to develop or implement new or significantly improved processes and products as the major barrier to innovation. Several competence barriers to innovation and variables affecting innovation were examined by previous researchers.

Barriers to innovation in SMEs have been the object of investigation in a large body of national and international studies. A few are mentioned here: Acs [2] worked on this topic in the US [36] in Sweden while [26] as well as [4] researched on them in Canada. In Germany the Centre for European Economic Research (ZEW), has conducted several studies in recent years (e.g. ZEW and DIW, 2014) [30]. Further studies dealing with the German situation have been conducted by the Friedrich Ebert Stiftung (2004) and Hamburg Institute of International Economics (HWWA, 2004). SMEs are facing barrier to innovate in around the world global economy and main reason is access of external finance. It has been studied that SMEs are facing similar barrier to innovate in developing countries economy as investigated conducted.

On the other hand a study by Silva [33] to identify the barriers to innovation that influence the innovation capability of Portuguese industrial firms based on information from database obtained through the Community Innovation Survey II. Questionnaire was administered to 819 firms, of those answered the questionnaire, 470 carried technological innovations during the period of 1995 -1997.

Similarly the study were conducted by Lim [22] based on national Survey of Innovation 2000 - 2001 data to investigate the obstacles to innovation faced by Malaysian manufacturing firms during the process of innovation. Innovation obstacle is evaluated by 671 firms (279 innovators and 392 non - innovators). The information was obtained on the relevance of each of nine obstacle including cost of innovation, economic risks, lack of sources of finance, lack of information on markets, lack of information on technology, lack of skilled personnel, lack of customers response, legislation & regulation and organizational rigidities are analyzed using descriptive statistics. The analysis explores the differences between firms by industry type and firm size

2.3. Conceptual Frame Work

This conceptual frame work indicates the relationship between barriers of SMEs and SMEs innovativeness. The frame work indicates barriers of SMEs innovation like HCI, LF, GPR, OC, LSP, SE, IRD, LC, and LTMI result for low SMEs innovation. This framework was developed from the study of Aminreza [3], Silva [33] and Lim [22] by taking the variable LSP, GPR, LTMI, LF and HCI, OC from [33] and [22]; and R&D, Cooperation and Size [28] variables also were taken from the study of [9].
3. Methodology

This chapter presents the research design and methods used in the study. It includes the research design, study area, study population, sample size and sampling procedure, data collection method and data analysis techniques.

3.1. Research Participants

The reasons for owners and employees of each SME’s were chosen as suitable candidates for the questionnaire, is that the owners make most of the decisions with regard to the SME’s [45] as cited in [3]. In addition interview was conducted with officials, government officers of the authority concerns, customers and other stakeholder as seems to be important for the report i.e customer etc.

3.2. Sample Size

There are several factors that influenced the selection of the sample size. These factors included how representative the sample was expected to be in relation to the methods that were used in data collection and analysis. In the study, a sample size of 384 was selected from Arusha City and Kilimanjaro municipality. This sample size was computed in accordance with [46]. Since we didn’t know the proportion of the Kilimanjaro and Arusha residence who were employed in the furniture industry we took a proportion of 50%=0.5 as required an manage to compute the overall minimum sample size of the current study was computed using single population proportion formula1, and since this among the social studies, the researcher used the 95% confidence level.

\[ n = \frac{z^2 \cdot p \cdot (1-p)}{e^2} \] [46]

3.3. Sampling Procedure

To get data from furniture enterprises, the researcher purposely selected furniture-making firms. Non-probability convenience sampling was used as the sampling method. Convenience sampling was considered as the preferred sampling method because a specific segment of the population was targeted, namely furniture firms in Arusha city and Kilimanjaro municipalities [43,44]. The sampling process stopped once the required sample size had been secured.

The researcher decided to choose snowball sampling because the populations of furniture firms are hidden but also these people working in this industry they highly depend on each other and quite to large extent they know each other, that is why Snowball sampling technique become appropriate. Other reasons as to why snowball sampling technique was appropriate in this study area were:

- Not registered hence have to hide in order to escape authorities.
- Most firms don’t have the license for them to conduct their businesses.
- Majority of hidden firms tend to use unauthorized materials such as timber from rare species of trees (hard wood) that are not used without permissions from the Ministry of Natural Resources.
- Furthermore, most firms are hidden in order to avoid taxation as the taxes are high and to them, paying taxes means operation on losses.
- Many of these furniture firms are hidden because there is no official system which recognizes them.

3.4. Method of Data Analysis

The method of data analysis and presentation of finding involves using qualitative and quantitative approach. Hence data tabulation and statistical computations was
used. To analyze the findings descriptive statistics like percentage, mean, mode, tables and figures presentation was applied by using latest available version of SPSS 19 package. The SPSS program was used to analyze the results of the questionnaire. In addition correlation and reliability analysis was used.

4. Findings of the Study and Discussion

Study describes and explains factors which negatively affect (barriers) for SME innovation. 384 questionnaires was distributed, to conduct the study on different variables taken to measure the level by which SME’s could be affected in the introduction or expansion of innovation despite, 354 usable questionnaires were obtained (92% response rate).

From the selected enterprises 54 had engaged in innovation whereas, the remaining 300 enterprises didn’t introduced innovation. Out of those 54(15.3%) enterprises introduced technological innovation, 34(63%) are small & 20 (37%) are medium enterprise. Proportionally, new technology introduced account; metal and woodwork sectors were 34 for small and 20 are medium enterprises, respectively.

Small Medium Enterprises’ (SMEs) engaged on innovation, the type of technology they introduced was product, process and both product and process were 8%, 7% & 7% for small and 6%, 3% & 7% for medium enterprises, respectively. Enterprises didn’t introduce or expand innovation are 94(31%), 80(27%) are small & 126(42%) are medium enterprise. The reason was due to market condition, factor constraining innovation and both market and constraining factors were 1.9%, 67.1% and 4.6% for small enterprises and 30.6%, 27.4% and 4.2% for medium enterprises, respectively.

4.1. Challenges on Securing Loans for Furniture Industry in Tanzania

The study found that about 15.5% responded that, high interest rates is among the problems the industry face, on the other hand, it was noticed that only 5.9% of the respondent (furniture industry owners) had no problem with loan and the remaining 78.6% were employees and others had not taken loan for establishing their firms. During the in depth interview with the SMEs financial officers it was established that the “Terms and Conditions” which should be fulfilled by the loan consumers was seen to be the most strong obstacles for the SMEs to obtain the loan from the financial institutions. Taking Loan from Banks or Financial institutions was mentioned as a big challenge for the growth of furniture firm in a study area.

4.2. Barriers to Innovation and Ways to Overcome Them

Considering the setbacks in the furniture firms brings up the understanding as to why despite the increase in innovation, the sector fails to flourish. It is clearly not easy to advance when the constraints are more compared to the success factors. Table below is a presentation on the constraints set back in this sector despite the injected efforts by innovative furniture firms.

<table>
<thead>
<tr>
<th>Constraints/Barriers</th>
<th>Percent (%)</th>
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<tbody>
<tr>
<td>Shortage of capital</td>
<td>29.4</td>
</tr>
<tr>
<td>More than one reason</td>
<td>0.6</td>
</tr>
<tr>
<td>Tariffs</td>
<td>25.4</td>
</tr>
<tr>
<td>Government policies</td>
<td>9.3</td>
</tr>
<tr>
<td>Access to new Technologies</td>
<td>3.7</td>
</tr>
<tr>
<td>Promotion/market on local products</td>
<td>5.9</td>
</tr>
<tr>
<td>Other reasons</td>
<td>3.1</td>
</tr>
<tr>
<td>Power OFF/ON</td>
<td>13.8</td>
</tr>
<tr>
<td>No Constraints</td>
<td>5.4</td>
</tr>
<tr>
<td>Natural resources authorities</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Figure 2. Reasons for not taking loan
4.3. Why SMEs didn’t Engaged or Expand in Innovation

Unfavorable government policy and regulation are obstacle for SME’s industry innovation with 1.34 grand mean and particularly, Low patent protection, absence of government R&D funding, low financial regulation assurance, low support for doing and expanding innovation, low access & usage of government loan, no modification of tax system to encourage innovators & provision of unequal support for all enterprise(not consistent with interview) are more important factors identified as barriers for SME’s industry level innovation. Moreover, GPR is barriers for small enterprise innovation despite; it’s not important obstacles for medium enterprise. Similarly, with finding of this study [33] and [22] noted that government regulation is important barriers to innovation.

Lack of technological & market information is also important obstacles for SME’s industry level innovation. Particularly, Low access & utilization of up to date technological information and materials, lack of technological transfer institution, absence of access & usage of internet service; inadequate knowledge of market & their demand, & low effort for new technological markets to serve are an important obstacles for industry level innovation. Moreover, both small & medium enterprises specific innovation were obstacle by Lack of Technological Innovativeness of SMEs. This finding is similar with [33] and [17] which identified as barrier for innovation.

In a similar way, inadequate R&D is considered as an important obstacle to SME’s industry level innovation. Even if, SME’s believe that R&D enable to introduce or expand innovation, factors like, unable to have organized R&D office & equipped staffs, no engagement on R&D and absence to use new finding of R&D of private organization are important barriers to SME’s industry level innovation. Moreover, Inadequate R&D is an important barrier both for small and medium enterprise, were grand mean values are 1.0 and 1.43, respectively. Consistent to this finding [17] noted Inadequate R&D as obstacle to innovation.

Similarly high cost of innovation is also an inhibiting factor to industry innovation. Particularly, Inability of hiring and purchasing of necessary skilled human power and equipment, cost of innovation is not tolerated by enterprises, inability of enterprises to acquiring external competence, no budgeted money for innovation activities, innovation is not ongoing bases, and fail to take risk by enterprises are important barriers to SME’s industry level innovation. Moreover, High Cost of Innovation is an important barrier both for small and medium enterprise to engage in innovation. Lim [22] and Silva [33] also identified cost as restrain factor for technology introduction consistent to this finding.

Likewise, organizational culture (1.4802) is also identified as an important barrier for SME’s industry innovation. Particularly, Low employee empowerment, low synergies of resources, insignificant role of managers and/or owner to promote innovation, no spent time to listen employee ideas by supervisors, absence of updating staff with best practice and shortage of exploiting opportunities to innovation are important barriers to SME’s industry level technological innovation. Moreover, Organizational Culture is an important barrier for small enterprise innovation despite; it’s not barriers for medium. The study of Aminreza [3], Silva [33] and Lim [22] identified Organizational Culture as restraining factors for innovation.

Size of enterprises which could be measured in financial and human resources is important restrain factor for industry innovation. Hence, Facing innovation related problem, limit in assignment of internal funds for innovation (true both for small and medium), and limited engagement of innovation with help R&D are barriers for innovation in line with enterprises size for industry level. Moreover, small enterprise innovation is restrained by Size of Enterprise, despite for medium enterprises it isn’t as such barriers. Finding of Concepcion [9] identify Size of Enterprise as barrier to innovation consistent with this finding for industry & small. SME’s at industry level innovations is restrained by lack of skilled personnel. Therefore, inadequate number of trained personnel for innovation, absence of individual with creative & innovative ideas, managerial incapability to manage innovation process, & inadequate qualified employee within enterprise are important barriers for industry to engage in innovation. Moreover, Lack of Skilled Personnel is an important barrier for small enterprise, however, it’s not as such barriers for medium enterprise. Likewise, Aminreza [3] are consistent to this finding that innovation is affected by Lack of Skilled Personnel.

Lack of finance was identified as the major obstacle for industry innovation. Particularly, Insufficient funds for innovation, absence of access to long term loans for innovation, absence of funds from outside sources, absence of investors which is encouraging firms through financing, and insufficient support from banks & financial institution to collateral requirements are impeding industry level innovation. Furthermore, Lack of Finance is important barrier for both small and medium enterprise were 0.46 and 0.72, respectively. This finding is in line with [3,22,25,29] that economic factors particularly Lack of Finance are factors restrain SME’s innovation.

Lack of cooperation is important barriers for industry innovation. Thus, difficulty in finding cooperation partners for innovation, low cooperation with institution & business services providers, low access of expertise’s from other firms, having low relationship with different association, deficiency of having cooperation with government, private institution & NGO in relation to innovation are important barriers for industry innovation. Moreover, Lack of Cooperation is an important barrier for both small and Medium enterprise specific innovation. Similarly, the finding of [28] are in line with this study as identified Lack of Cooperation as barriers for innovation.

5. Conclusion

Medium enterprises better engaged on innovation, particularly those SME’s in woodwork and metalwork sector from that construction sectors. Factors constraining innovation is the main reason for small and medium enterprise so far did not innovate or actively engaging in
invention. For organization government policy and regulation has positive and negative effect on firm performance. As a result, enterprise innovation performance might be also encouraged or discouraged by policy and regulation of countries government. Regarding this government policy and regulation is an important restraining factor for SME’s industry and small enterprise innovation. However, it’s not taken as an important inhibiting factor for medium enterprise innovation. Information is power to every organization or SME’s to cope up in this dynamic environment and to overcome competitive restrain factors. However, lack of technological & market information is obstacle to SME’s industry and both small and medium enterprise specific innovation. It is undeniable that R&D importance for firms to innovate new technologies, to imitate technology and to gain competitive advantage. However, if those firms don’t have adequate engagement on R&D, it can be difficult to perform well in the introduction of creating new technology or adding values on existing products. Therefore, inadequate R&D is barrier for SME’s at industry and at specific small and medium enterprise innovation.

To engage on innovation enterprise is able to have necessary resources and capabilities. As a result of asking huge money to own those resources and capabilities, enterprise isn’t in a position to own and engaged on innovation. Hence, high cost of innovation is a major obstacle to SME’s industry and both small and medium enterprise innovation. Usually innovation idea is created from people mind and those organizations govern the collection of peoples, resources and values they have. The culture organization have can limit or foster performance of innovation in organization. Thus, organization culture is important barriers to SME’s industry level and small enterprise innovation unlike true for medium enterprise innovation.

Generally, size is associated with the enterprise capital and number of hardware or software firm have. As a result, larger firm has a probability to own such capabilities from small one. Therefore, SME’s industry and small enterprise innovations are obstacle by size of enterprise even though, for medium enterprise it’s not important barriers. Organizational activities cannot be achieved without the existence of human beings. However, enterprise has inadequate skilled human power; so it’s difficult attain its objectives as it’s required. This is true for SME’s, that skilled human power is required in the introduction or expansion of new technologies. Therefore, lack of skilled personnel is taken as inhabiting factors for SME industry and small enterprises, unlike for medium enterprise innovation.

Finance is the main root of business. If firms do not have sufficient amount of finance it’s impossible to compete with others. That is why lack of finance is important barriers for SME’s industry, small and medium enterprise specific to engage on innovation. Due to fast changing environment and increase of knowledge dissemination, it is difficult to SME to maintain competitive advantage through internal R&D. Particularly, for radical innovation that is drawn on new scientific knowledge that emanated from universities and research organization as a result it’s important to cooperate with others. So, lack of cooperation is important barrier for SME’s industry and small and medium enterprise specific innovation even though, statistical insignificant relation between lack of cooperation and small and medium enterprise technology innovation performance. Notably, Lacks of finance, lack of skilled personnel, inadequate R&D are the three most impeding SME’s industry level innovation with internal factors. On the other hand, High cost of innovation, lack of technological and market information, and government policy and regulation are the three main impeding SME’s industry level innovations within external factors.

5.1. Suggestion for Further Research

- It would be interesting to examine why small and medium enterprise noted organization culture as low restrain factors for innovation by including or only considering non innovation (market and organization innovation).
- Moreover, finding out why, how and what the remedy should be Tanzania is on the bottom (lowered) of the innovation continued?

References


