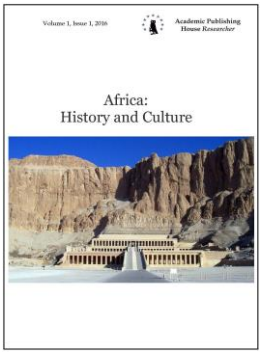
Published in the Russian Federation
Africa: History and Culture
Has been issued since 2016.
E-ISSN: 2500-3771
Vol. 2, Is. 2, pp. 24-32, 2016

DOI: 10.13187/ahc.2016.2.24
www.ejournal48.com



Firms' Demographics and Barriers to Innovation in Ghana: Can SMEs in Developing African Economies Swot Something Up?

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Paper Review Summary:
Received: 2016, April 13
Received in revised form: 2016, July 17
Acceptance: 2016, July 20

Abstract

In recognition of the relevance of Small and Medium Scale Enterprises [SMEs] and innovation in economic development, efforts are being made to find strategies to overcome the barriers to innovation among SMEs. However, it is not clear from extant literature, as to whether all SMEs, irrespective of their demographic features, face the same barriers to innovation. It is on this premise that this study seeks to investigate the differences in constrains to innovation faced by SMEs as a result of their varied demographic characteristics. The study adopted a quantitative approach and sampled one hundred SME firms in Ghana as respondents for the study. The demographic characteristics considered in the analysis include education of owner-managers; control of activities (family control or non-family control); sector of SME; firm size (number of employees) and years of operation. The barriers to innovation also comprise of human, management, technical, supply, demand, government and culture related barriers. The results reveal that, SMEs with different demographic characteristics face different barriers to innovation. However, in most cases, irrespective of the educational background of SME owners, they face the same barriers with respect to management, lack of technical expertise, supply related barriers, and government related barriers. This study recommends that, developing African economies should quickly learn to reform SMEs on the basis of their demographic characteristics to enhance their innovative capacities.

Keywords: barriers to innovation, demographic information, developing African economies, Ghana, innovation, small and medium scale enterprises.

Introduction

Despite the increasing proliferation of small and medium scale enterprises (SMEs), the impact of SMEs on the economic development as well as their participation on the global stage has been limited. In connection to this, Patel (2007) explains that, the low participation of SMEs on the global stage is mainly because of the low level of innovation among these firms. Consequentially,

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some scholars argue that low level of innovation is as a result of some constraining factors that impede the innovativeness of such firms. However, recent debates in the innovation literature have erupted the question whether SMEs inability to innovate has solely been as a result of the presence of constraining factors. To this, some scholars have circuitously suggested that a firm's demographic characteristics are likely to affect the impact of these constraining factors on a firm. Such scholars assert that factors such as firm size, sector of operation inter alia, may have direct or indirect impact on a firm's innovativeness (D'Este, Iammarino, Savona, & Von Tunzelmann, 2008; D'Este, Iammarino, & von Tunzelmannc, 2012).

Hence, this calls for empirical studies to help probe into the possible impact or relationship that a firm's demographics have on/with the constraining factors of innovativeness.

Stemming from this, some recent discussions in both academia and practice have focused and indicated a low level of innovation among SMEs (Patel, 2007) as well as the role constraining factors play in this respect. Remarkably, this attention has heightened further because of its negative impact on economic growth, poverty reduction and development (Feldens, Maccari, & Garcez, 2012). Most scholars (Blanchard, Huiban, Musolesiz, & Sevestre, 2012; Madrid-Guijarro, Garcia, & Van Auken 2009; Tiwari, & Buse, 2007; Feldens et al., 2012) focusing on investigating the constraints to innovation have often assessed such areas as barriers to innovation. Others have looked at perceived barriers to innovation (Lekovic, 2013), actual barriers to innovation (Blanchard et al, 2012) and revealed and deterring barriers to innovation (D'Este et al., 2012).

In an attempt to demonstrate the importance of demographic characteristics on the innovativeness of SMEs, some scholars have assessed the impact of SME demographics on their innovativeness (Baldwin, & Lin, 2002; Hyytinen, & Toivanen, 2005). However, empirical evidence in this respect is inconclusive (Wziatek-Kubiak, Peczkowski, & Balcerowicz, 2010). Studies, in this respect, have suggested a relationship between SMEs demographic characteristics and the compelling factors likely to impact their innovativeness. However, this relationship has not been empirically investigated; especially in relation to SMEs in developing economies. Identifying such nexus may help SMEs to identify, per their demographic characteristics, the categories of constraints that are likely to impact their innovative behaviors as well as help them understand the intensity of these constraining factors on their innovative activities.

The current study will attempt to understand how SMEs demographic characteristics relates with the constraining factors. For some scholars postulate that smaller SMEs are likely to, by virtue of their size, succumb to constraining factors and still be able to innovate. Drawing from some empirical results and cursory observations of SMEs and their constraints to innovation, a probable nexus may exist between a firm's demographic characteristics (for instance; size) and its innovation constraints (for example, internal constraints).

SME demographic characteristics

In recent decades, scholars examine SMEs characteristics and their potential implication on such factors as performance (Hyytinen, & Toivanen, 2005) and innovation (Baldwin, & Lin, 2002) and entrepreneurial orientation (Esuh, & Adebayo, 2012). These characteristics are defined in relation to size, number of employees, purpose, degree of risk, sector, growth focus and key attributes. The following paragraphs reveal some discussions on these characteristics.

Discussions on the ideal size of SMEs have been considered on several forums and platforms in global business. Yet, a concise, precise and standardized definition has not emanated from these discussions (Arowomole, 2000). In other words, several scholars and institutions hold and define SMEs with respect to size, in diverse ways. The lack of agreement on a concise and standardized definition has forced countries and institutions to individually posit definitions that construes with their geographical and demographical characteristics (Darren, & Conrad, 2009). In spite of the ambiguity with regard to the standardized size of SMEs, most scholars agree SMEs constitute considerably smaller business organizations; mostly ranging from 11-100 employees (Alarape, 2008). This assertion, according to Alarape (2008), is explicably justified by its acronym [SMEs]. Esuh and Adebayo (2012) also explain that size can also refer to the extent of business, market size and share as well as size of investment. Also in this respect, SMEs were found to be relatively smaller in size. Even though SMEs are relatively smaller in these respect, scholars note that their relative category of sizes [*large SME or small SME*] may affect their performance and innovation (Baldwin, & Lin, 2002; Hyytinen, & Toivanen, 2005).

Additionally, Kayanula and Quartey (2000) also explained that the majority of the activities of SMEs in Ghana and Malawi were in relation to soap and detergents, textile and leather, clothing and tailoring, ceramics, timber and mining, bricks and cement, beverages, food processing, bakeries, wood furniture, electronic assembly and agro processing. This goes to prove that SMEs in most developing nations often belong to the manufacturing, agro and service sector. For this reason, these three sectors were considered in the current study. However, the question that has not been asked is whether these sectors have any role in determining the kind of constrains the firm is opened to; hence the current study seeks to assess this nexus.

As found in recent literature, another characteristic of SMEs, popularized especially among most developing nations, is the organizational skills to manage efficiently, moderate growth, moderate need for achievement and chief of all, with regard to current study, is the little innovation in such firms (Esuh, & Adebayo, 2012). This characteristic was not only true with respect to developing economies, but Hadjimanolis (1999) found this to be also true with firms in underdeveloped economies.

Even though the length of existence is generally assessed in several studies as an important demographic variable, especially with respect to SMEs and constrains to innovation (Hewitt-Dundas, 2006), most of these studies have not attempted to investigate its possible relationship with these constraining factors. At best, scholars in this study area have considered the firm age as a control variable, in order to control its impact in their assessment of the innovative behaviours of firms as well as the constrains faced (Galia, & Legros, 2004; Madrid-Guijarro et al., 2009). This may directly point to the fact that firm age has some nexus with the innovativeness of SMEs as well as their constraining factors; hence the need for an empirical study to assess this relationship.

Finally, some researchers have made attempt to examine the impact of a firm's age on its innovativeness. However, very little empirical evidence exists in this respect. Madrid-Guijarro's (2009) investigation of Spanish firms found that a firm's age did not have a significant impact on the innovativeness of that firm. However, by cursory observation and some expert analysis in developing countries like Ghana, the rigidity of small and medium scale enterprises tends to be increasing with their age and length of service, thereby affecting their innovativeness.

Methods

The sampling frame for the current study includes all registered enterprises in the listed on the National Board for Small Scale Industries [NBSSI] database in Ghana. The sample frame was limited to only firms based in the Greater Accra Region. Some of these firms considered had branches in other regions, whereas others had migrated from other regions to be based in the capital. Thus, most of these selected firms had broader coverage across the other regions in Ghana and beyond. In view of this, their responses as captured, demonstrate the broadness of the perspectives considered in the study, thereby warranting the relative generalizability of the findings.

The current study adopted the purposive sampling approach. This method was considered appropriate for the study because the current study included only registered firms in the database of NBSSI [*as such firms are often well structured in terms of organization and product delivery*]. In addition, such firms must have more than five employees and have a starting capital not more than $5000 (Quaye, & Acheampong, 2013). After a pilot study, 120 firms were considered for the current study. However only a hundred (100) respondents [*one from each firm*] responded. This gave us a total response rate of 83.3 %.

The researchers used self-administered survey questionnaires which was developed with a good reliability and validity. Each questionnaire had two sections; the first section collected data on the demographic characteristics of the SMEs, which included four main demographic characteristics peculiar and relevant to firms in the Sub Saharan sub-region. The second section has two broad classifications of variables namely, external and the internal factors. Under these two broad categorizations, the sections in all have eight (8) sub-divisions including human related, culture and system related, management time, technical expertise, financial, supply related, demand related and environment related factors. The internal and external variables numbered 5 and 3 respectively. With an average of three constructs to measure each variable, in all 46 constructs were used to assess the factors constraining innovation among SMEs. Respondents

were allowed to assess all eight variables on a four Likert scale, spanning from no impact to high impact.

Results

Demographic information of SME owner-managers and businesses

In an attempt to offer a lucid description of the respondents for the current study, the researchers, in relation to the objectives of the study gathered the demographic information on the businesses as well as the owners of the SMEs. This was done to assess the background of the respondents as well as how such information impacts the overall finding of the study. Additionally, these discussions allowed the researchers to contextualize the findings of the study to the type of SMEs considered. In view of this, the researcher investigated the educational background of the owner-managers, as this is likely to have some impact on the innovative propensity of their business. Moreover, with regard to the firm, the study gathered information on the sector, educational background of the owners, number of employees, control of activities and the number of years of operation (see Table 1).

Table 1. Demographic Information of SME owner-managers and business (N = 100)

Variables	Frequency
Sector	
Manufacturing	44
Sector	56
Number of employees	
5-10	61
11-20	15
21-30	10
31-40	11
41 and Above	3
Years of operations	
1-5	70
6-10	27
11-15	3
16 and above	-
Control of activities	
Controlled by a Family	33
Managers who are not relatives	67
Education	
Primary	11
Junior High	1
Senior High	18
Professional	19
Tertiary	51

The results in Table 2 show that firms with different control of activities, sector of operation, and firm size (number of employees) were significantly different with respect to management time related barriers. For example, management of relatively larger SMEs may have more time in supervision, and hence less time to innovations. Nonetheless, these firms faced the same constraints to innovation irrespective of the educational background of the owner manager and years of existence. Thus, owner-managers with formal education face the same management related barriers. Again, years of existence has no nexus with the management prioritizing and making time for innovation.

Table 2. Management time related barriers

ANOVA						
Demographic features		Sum of Squares	df	Mean Square	F	Sig.
Education of owner-managers	Between Groups	6.781	10	.678	.571	.834
Control of activities	Between Groups	4.740	10	.474	2.429	.013
Sector of SME	Between Groups	6.889	10	.689	3.454	.001
Number of employees	Between Groups	42.120	10	4.212	3.910	.000
Years of operation	Between Groups	6.785	10	.678	1.763	.079

With respect to technical expertise related barriers, Table 3 shows that firms with different control of activities, sector of operation, years of operation and firm size (number of employees) were significantly different with respect to technical expertise related barriers. For example, SMEs in the manufacturing sector often have a higher need for technical expertise; hence, lack of technical expertise may be a chief barrier to innovation compared to firms in the service. Nonetheless, these firms faced the same constraints to innovation irrespective of the educational background of the owner-managers. Even though educated owner-managers may appreciate the need for expertise more, they may be equally constrained financially and in the non-availability of technical experts.

Table 3. Technical expertise related barriers

ANOVA						
Demographic features		Sum of Squares	df	Mean Square	F	Sig.
Education of owner-managers	Between Groups	18.919	12	1.577	1.465	.153
Control of activities	Between Groups	7.534	12	.628	3.747	.000
Sector of SME	Between Groups	9.135	12	.761	4.272	.000
Number of employees	Between Groups	50.948	12	4.246	4.243	.000
Years of operation	Between Groups	8.722	12	.727	1.957	.038

Additionally, the findings of the study reveal in Table 4 that firms within different sectors of operation, sizes (number of employees) and years of existence were significantly different with respect to supply related barriers. However, it also demonstrates that SMEs face the same constraints to innovation irrespective of the educational background of the owner manager and their control of activities.

Table 4. Supply related barriers

ANOVA						
Demographic features		Sum of Squares	df	Mean Square	F	Sig.
Education of owner-managers	Between Groups	17.036	9	1.893	1.783	.082
Control of activities	Between Groups	1.543	9	.171	.750	.662
Sector of SME	Between Groups	4.764	9	.529	2.397	.017
Number of employees	Between Groups	24.808	9	2.756	2.192	.030
Years of operation	Between Groups	6.470	9	.719	1.872	.006

The study found that SMEs different on the demographic categories considered in this study were all significantly different with respect to demand related barriers. For instance, SMEs in different sectors may have different constraints and difficulty in how they identify customer needs and perception of their products.

Table 4. Demand related barriers

ANOVA						
Demographic features		Sum of Squares	df	Mean Square	F	Sig.
Education of owner-managers	Between Groups	37.084	14	2.649	2.983	.001
Control of activities	Between Groups	7.023	14	.502	2.826	.002
Sector of SME	Between Groups	8.069	14	.576	2.956	.001
Number of employees	Between Groups	68.484	14	4.892	5.981	.000
Years of operation	Between Groups	26.929	14	1.923	11.586	.000

Moreover, Table 5 indicates that only sectors of operation and firm sizes were statistically significant. Thus, firms within different sectors and those with different sizes have relatively different experience in respect of government related barriers. For example, firms with different sizes may face different challenges in terms of taxes, as smaller firms may enjoy some tax exemptions that larger SMEs may not have or enjoy. Nonetheless, irrespective of the educational background of the owner-manager, control of activities and years of existence, SMEs in these different categories show no difference in the government related barriers faced.

Table 5. Government related barriers

ANOVA						
Demographic features		Sum of Squares	df	Mean Square	F	Sig.
Education of owner-managers	Between Groups	25.275	25	1.011	.857	.658
Control of activities	Between Groups	7.112	25	.284	1.403	.133
Sector of SME	Between Groups	9.715	25	.389	1.927	.016
Number of employees	Between Groups	71.553	25	2.862	3.188	.000
Years of operation	Between Groups	10.693	25	.428	1.043	.428

Finally, Table 6 reveals that SMEs demographic differences affect the kind of culture barriers faced by a firm. In this stance, as was the case with demand related barriers, the study found that the educational background of the owner-manager accounted for the culture related barriers faced by these firms. This was possible in this instance because a person's educational background is likely to affect their predisposition to culture. Highly educated SME owners will face lesser bottlenecks with regards to cultural constraint, where owner-manager with a lower educational background may hold on to entrenched cultural positions.

Table 6. Culture related barriers

ANOVA						
Demographic features		Sum of Squares	df	Mean Square	F	Sig.
Education of owner-managers	Between Groups	28.385	14	2.028	2.047	.023
Control of activities	Between Groups	10.842	14	.774	5.842	.000
Sector of SME	Between Groups	11.048	14	.789	4.935	.000
Number of employees	Between Groups	57.086	14	4.078	4.283	.000
Years of operation	Between Groups	18.947	14	1.353	5.207	.000

Discussion

The study considered a quantitative assessment of one hundred (100) SME firms as respondents, and statistically juxtaposed their demographic characteristics against the barriers faced. The demographic characteristics considered in the analysis include education of owner-managers; control of activities (family control or non-family control); sector of SME; firm size (number of employees) and years of operation. On the other hand, the barriers to innovation considered comprised; human, management, technical, supply, demand, government and culture related barriers. The results revealed that SMEs with different demographic characteristics faced different barriers to innovation. However, in most cases, irrespective of the educational background of SMEs owners, they face the same barriers with respect to management, lack of technical expertise, supply related barriers, and government related barriers. In the instance of demand and culture related barriers, the educational background of owner-manager, however, were found to be confounded with the same barriers in this respect.

Even though educated owner-managers may appreciate the need for expertise more, they may be equally constrained financially and in the non-availability of technical experts. Blanchard et al. (2012) acknowledge the impact of firm size and sector on barriers faced, and how they cause SMEs to face different challenges. Educational background of SME owners had been discussed as a barrier to innovation among Spanish manufacturing SMEs (Madrid-Guijarro et al., 2009). Also in some rare instances, "control of activities" also did not make a difference in the type of barriers to innovation faced by SMEs. These include such instances where the firm is faced with supply related and government related barriers to innovation. The implication of this is that this classification (family controlled or managers controlled) must be considered, in an attempt to deal with barriers to innovation like government related barriers. On other hand, strait jacket remedies can be applied in the instance of management, technical expertise and demand related barriers. It is noteworthy that, size as a variable or determinant of innovation is a biasing factor and does not allow researchers to tell the actual innovation propensity of firms. In this respect, these researchers postulate that firm size as a variable ought to be controlled, in order for the researchers to ascertain the actual innovation propensity of the firm (Madrid-Guijarro et al, 2009).

Baldwin and Lin (2002) argue that the degree or intensity of innovation varies with industry and that industries with ferociously dynamic technological environment require high intensity for innovation. This argument explains that the technological environment is an important demographic of a firm as it has potential to affect its innovativeness. The most widely empirically supported view in this respect is that firms in low and medium technology industries have a lesser tendency of been impeded in their innovation process compared to firms within the class of high

and medium high technology industries. Extant literature indicates that firm's demographic characteristics even though not a major factor constraining firms in their attempt to adopt the innovation process, it is a contributing factor that tangentially affect the firm's ability to innovate (Baldwin, & Lin, 2002; Hyytinen, & Toivanen, 2005).

Several efforts have been made by both government and other stakeholders to improve SMEs' contribution and development in developing economies. For examples, several studies have assessed and postulated ways by which access to finance can be improved among SMEs (Abor, & Quartey, 2010) and to enhance their adoption of technology for innovation (Quaye, 2014). Whereas, others have also influenced policies geared at creating conducive environment for these firms to thrive (Okpara, 2011; Blanchard et al., 2012). Additionally, though these challenges in operation as well as barriers to innovation have been adequately identified, strategies and policies to mitigate these barriers and constraints in SMEs' operations are still too general. Thus, these proposed solutions (both policy direction and management) do not take into consideration the possible difference that their specific demographic characteristics may erupt into. It is in this respect that the study has categorized SMEs on the basis of their demographic characteristics and assessed the differences in barriers faced as a result.

Conclusion

Again, the study's findings provide reason for the failure of government policy and activities to deal with barriers to innovation in most developing African economies. The study recommends that proposed solutions (both policy direction and management) must take into consideration the possible difference in their specific demographic characteristics, as this may have implication on the kind or intensity of barriers faced. Particularly, immense attention should be paid to the educational background of the owner-managers, control of activities and the tenure of business. The study also has implication for further studies. In order to strengthen the case for this paper, future studies can focus on replicating this study in other developing economies. Additionally, it would be interesting to find how these findings compare to findings in a developed economy. Thus, a comparative study between a developed and developing economy can be conducted to further show whether these demographic differences matter for barrier to innovation.

Conflict of Interest

The authors declare that there was no conflict of interest.

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