OPEN ACCESS
International Journal of Management & Entrepreneurship Research
P-ISSN: 2664-3588, E-ISSN: 2664-3596
Volume 4, Issue 11, P.No.469-487, November, 2022
DOI: 10.51594/ijmer.v4i11.412
Fair East Publishers
Journal Homepage: www.fepbl.com/index.php/ijmer

INNOVATION AND OBSTACLES IN WEST AFRICAN FIRMS: AN EVIDENCE FROM THE GHANAIAN CONTEXT

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Article Received: 25-10-22 **Accepted**: 19-11-22 **Published:** 23-11-22

ABSTRACT

Innovation is a concept that has kept the attention of researchers worldwide. Innovation leads to product and process improvement, assists the organization to survive, grow faster, efficiently, and be more profitable than non-innovative organisations. However, the innovation level among Ghanaian firms is not yet reaching its full potential. In addition, innovative behaviour among Ghanaian enterprises is still at the infancy stage. To boost the innovation rate, it is imperative to solve the challenges and issues faced by Ghanaian firms. Innovation has become the building block of development in both developed and developing countries it is commonly agreed that innovation is the critical path towards growth and prosperity for countries as well as for individual firms. It is the key to technology adoption, creation and explains the vast difference in productivity across and within countries. However, in Africa, the case seems to have faced a challenging time due to obstacles like finance accessibility, electricity, trade regulations, land access, tax, corruption, informal sector malpractices, tax administration, political instability, transportation, and others. It is against some of these obstacles that we decided to embark on this study to help us critically investigate the effect of the barriers to firms' growth and its effect

on the degree of innovation among Ghanaian firms. To help recommend possible solutions to these obstacles. Hence, this will help facilitate firms' growth and their degree of innovation.
Keywords: Innovation, Obstacles, Firms, Ghana.

INTRODUCTION

Over the last three decades, innovation has become synonymous with national development, technological progress, and business success. Nowadays, innovation is more than just the "creation of something new"; it is a panacea for solving a wide range of problems. The term "innovation" is increasingly being used by policymakers, marketing specialists, advertising specialists, and management consultants as a metaphor, political promise, slogan, or buzzword rather than as a strictly scientific concept. The "need for innovation" fever has recently spread throughout all fields of science (Godin, 2008). Even biologists have recently begun to discover characteristics of innovation behavior. More and more glamorous types of innovation start to develop like "blue ocean innovation" (Kim and Mauborgne, 2005), "frugal innovation" and "organic innovation" (Moore, 2005). The core subject of innovation is not only the innovator, but also such "archetypes" as "customer anthropologist" as well as "roadblock removers" or "innovation faces" such as "cross-pollinator" and "caregiver" (Kelley and Littman, 2005). However, throughout history, innovations and innovators (as well as inventions and inventors) have not always been appreciated. They have long been prohibited in the society. During the 18th century, innovators were considered untrustworthy adventurers and crooks by society and heretics by the Church. Thus, for a long time, innovation has been defined as a deviation from political, religious and social norms. This was especially evident until the 19th century when innovation was not a subject of scientific study. It was only since the middle of the 19th century that in a rapidly changing world, the imperative for innovation increased. Innovation is common to all organizations' technology development and management, no matter how large a company is. "Innovation is the implementation of a new or significantly improved product or process, a new marketing, or organizational method in business practices" (OECD, 2005).

Innovation is widely regarded as the most critical competitive advantage that enables a company to thrive in today's dynamic business environment. It is undutiful that innovation derives prosperity for organizations and nations. Nowadays, it is commonly agreed that innovation is the critical path towards growth and prosperity for countries and individual firms. It is the key to technology adoption, creation and explains the vast difference in productivity across and within countries. Sub-Saharan Africa (including Ethiopia) ranks lower in the Global Innovation Index (GII) ranking of countries by region. The rating figure was calculated for each region by averaging the following factors: institutions, human capital and research, infrastructure, market sophistication, business sophistication, input, scientific outputs, creative outputs, and efficiency. Ethiopia, on the other hand, ranked low in terms of innovation, as measured by the following factors: gross R & D expenditure, creative goods exports, university or industry collaboration on R & D, regulatory quality index, domestic credit to private sector, number of scientific and technical journal articles, and ICT use index (Dutta, 2011). With increasing global competition and the quickly spreading of knowledge, the future of many businesses depends based on their ability to innovate Castells (2010), and Nassè (2019) argued in this regard that most modern managers pursue progressive strategies and policies to develop a responsive and dynamic small

and medium enterprises (SME) sector. This is done with the ability to innovate and respond quickly to changing economic environments. Emerging opportunities and threats compelled businesses to investigate and invest more in innovation to avoid becoming uncompetitive. In this context, innovation refers to a new solution that provides greater value to customers. Organizations use innovation to confirm critical decisions made in response to technological or market challenges. As a result, the importance of innovation as a driving force of economic development is widely acknowledged. In the business setting, innovation is frequently regarded as a critical source of strategic change through which a firm generates positive outcomes such as sustained competitive advantage. Furthermore, as cited by Aminreza et al. (2011), organized the reasons why businesses innovate: to improve quality, create new markets, expand the product range, reduce labour costs, environmental damage, and energy consumption; improve production processes and materials, and replace products or services. For these and other reasons, innovation has been a source of concern for many people. However, if countries are unable to engage in effective innovation activities, they will inevitably become dependent on other countries' innovated products, which will be imported in hard currency from both developed and developing countries. This is typical for countries such as Ghana. Similarly, a firm's participation in such activities is becoming mandatory unless it wants to lose market share and customers in the future as a result of a shift in existing customers' demand for new technology. As a result, innovation aids in meeting customer needs and enables businesses to introduce technology, which has become one of the most critical concerns for businesses. The Ghanaian economy is made up of very small individual businesses, small and medium scale enterprises (SMEs), corporate bodies and multinational companies. They together form the medium through which the economy transacts business activity and grows. The government agenda to make the private sector the SME sector mainly drives the engine of growth. The SME sector contributes over 70 per cent of the country’s GDP, according to Villars (2004). Over the years, SMEs have played a significant role in the economic development of most developing countries, particularly Ghana. It is a major form of business and a major employer, with a significant positive impact on Ghana's economic growth and GDP. Data was gathered from SMEs across the manufacturing, trade, commerce, and service industries.

Interviews, questionnaires, publications, and reports were used to collect data. It also revealed that, on average, the sector is a significant contributor to GDP.

Problem Statement

Innovation is a critical variable because it enables organizations and businesses to reconfigure existing resources, products, processes, and systems to meet market demands (Chen, Huang, Liu, Min, and Zhou, 2018). As a result, innovation is it is critical to sustaining a country's growth.

Every business's performance is dependent on a stable and sound economic environment. An idea, practice, or object perceived as novel by an individual or other unit of adoption such as teams, groups, or departments is referred to as an innovation (Rogers,1995). To be considered innovative, ideas must add value to the organization. They may result in developing new or improved products, services, systems, or work procedures. In every industry, being innovative is critical for adapting to changing technologies and working conditions, developing new products, learning new skills and jobs, and remaining competitive (Bingham, 2003). Individual, societal, and environmental factors all have an impact on innovation. Historically,

organizational innovation has been studied primarily from the organisation's perspective (Damanpour, 1996). The improvement of a structure, structural relationships, networking, and categorization of types of organizations have all been the subject of research.

Ghanaian businesses are the engines that propel organizations to imagine and develop new products and services (Reeves-Ellington, 1998). In order to develop Ghanaian enterprises, all barriers to the process and progress of innovation must be removed. Commitment to innovation as a culture should pervade most Ghanaian businesses, and it should be woven directly into mission statements. However, most Ghanaian businesses are still unable to plan, measure, and implement innovative products and services.

Last but not least, there is a paucity of research work and information on innovation activities in Ghana. Today, a nation's growth and industrial competitiveness is determined through its innovativeness. Therefore, the important question to ask is "to what extent are Ghanaian firms innovative?" and what obstacles inhibit firm's growth in Ghana? To the best of our knowledge, no extensive study examines the obstacles to innovation among Ghanaian firms that have been conducted in Ghana. Therefore, the study intended to fill this gap by investigating the obstacles to innovation among Ghanaian firms. The main research question, this study seeks to answer is: What are the obstacles to innovation amongst Ghanaian firms?

The main objective of this study is to investigate the relationship between obstacles faced by firms and innovativeness among Ghanaian firms.

The specific objectives of this research are:

-to describe the degree of innovation among Ghanaian firms;

-to assess the association between obstacles faced by firms and their innovativeness.

Hypotheses

The purpose of this study is to determine the impact of barriers to innovation affecting Ghanaian enterprises growth by considering how innovation is viewed as a source of competitive advantage and a decisive factor for economic growth that ensures the long-term development of Ghanaian enterprises in a dynamically changing business environment. This helps to validate or invalidate empirical literature in Ghana. The study provides answers to the null hypothesis below.

H_1: There is a lesser degree of innovation among Ghanaian firms.

H_2: There is no relationship between obstacles faced by firms and their innovativeness.

Significance of the Study

Ghanaian enterprises seek to combat various obstacles to innovation in the economy that will help sustain growth and support enterprises develop properly. Innovation is the backbone of developing products and processes and increasing sales (Avlonitis, Kouremenos, and Tzokas, 1994). Innovation has been linked to the development of new enterprises and the growth of existing enterprises. As new products, services, technologies, and enterprises are created, new employment opportunities arise. Thus, innovation can support the creation of new jobs in an economy (Pagano, and Verdin, 1997). Ghanaian businesses are working to overcome various barriers to economic innovation in order to sustain growth and properly develop businesses. Innovation is central to how businesses develop products and processes and increase sales. Innovation has been linked to creating new businesses and the expansion of existing ones. New job opportunities emerge as new products, services, technologies, and businesses emerge. In an economy, innovation can aid in the creation of new jobs. Ghanaian businesses are working to

overcome various barriers to economic innovation in order to sustain growth and assist businesses in developing. In academic research, there is a great interest in innovation. Innovation has been studied from many perspectives, including: (a) adoption, (b) diffusion, (c) organizational culture, (d) business environment, (e) technology, and (f) the individual. From the perspectives, the least research has been completed on the barriers to innovations among Ghanaian enterprises. This study will not only benefit the above mentioned but also economic institutions, financial institutions, students, and scholars interested in developing further studies on the subject matter.

LITERATURE REVIEW

Concept of Innovation

The classical Schumpeterian interpretation of technical change is defined as "a historic and irreversible change in the method of production of things" and "creative destruction" Schumpeter (1934). According to this definition, technical change in practice can be implemented in forms related to: the implementation of goods (products) that are new to consumers or higher quality than their previous counterparts, the implementation of production methods that are new to specific industries and economic activities in which they are used, the opening of new markets, the use of new sources of raw materials and the implementation of new forms of competition that lead to structural changes in the industries of their implementation. According to the Schumpeterian concept, innovation is defined as large-scale (radical) or small-scale (incremental) changes that significantly impact structural changes in individual industries and market segments. New production methods are not always based on new scientific discoveries in this approach. New methods can also be credited with the first application of technologies already used in other industries. Because innovation is associated with the processes of product manufacturing and use, the contents of this concept in international literature are based on various principles, and each cluster of definitions has its own distinct characteristics.

Historical Perspectives of Innovation

The historical development of the concept of innovation is summarized further. A detailed examination of the evolution of innovation studies, as well as some innovative concepts and models.

Pre 19th century

According to the same author, there was no relationship between innovation, creativity, originality, or application. Innovating meant imposing change on the established order, which was met with implicit and explicit opposition, particularly from the church and society. Economic, political, legal, scientific, educational, and religious opposition to innovation existed in all spheres of life. There was a negative attitude toward innovation and innovators. Because of the slow development of science, innovators were regarded as heretics and suspicious individuals, as only the innovators themselves could explain what they did and that their inventions were beneficial to society.

The second half of 19th century – first half of the 20th century

There was a gradual shift towards a more positive perception of innovation in this time. Innovation theories started to develop in many fields of science accompanied by a tendency towards explaining revolutionary changes in all spheres of life by innovations.

The first theories of innovation were developed in sociology (Tarde, 1902). Their innovation

was viewed as the change in social paradigms such as grammar, language, law, and religion. Nevertheless, the first use of the term "innovation" in sociological literature is found in Hart (1931), and then, started to spread over the other "innovation studies" in sociology (Ogburn, 1941). The term "technological change" was preferred by sociologists (Davis, 1940). In anthropology, innovation was understood as cultural changes (Smith et al., 1927). First theories of technological inventions emerged in psychology (Rossman, 1935) and the prototypes of innovation diffusion models also came from sociology (Gilfillan, 1935). Similar "models" were used in anthropology cultural change because of contact between cultures.

Anthropologists also were among the first to make an effort to quantify technological innovation as acceleration and growth of the material culture. The first analysis of the effects of technological inventions was done by Stern (1937). The first conceptualization of innovation was also done in sociology Chapin (1917) identified innovation as social experiments.

For these specialists' innovation (or technological invention) was a phenomenon (the process of paradigm in a social or cultural context- change) and broad construct. Therefore, anthropologists and sociologists took the "macro-level" view or, more precisely, the "society-level" view on innovation. For them, innovation was the background of social or cultural changes. Thus, their analysis was more descriptive rather than strongly mathematically computable. Economists took the other view on innovation. They looked more on the technical side of innovation. For economist's innovation was, in the first place, a means (or tool) for competitive struggle, a method to increase productivity, new products, processes or services and only after that "the concept itself", the innovation per se. Pareto (1935) initiated the innovator's verse conservator's discussions in economics.

In the 1940-s, especially in the second half after World War II, the growing trend in innovation studies was seriously broken. However, still, some innovation studies can be mentioned here, such as the first work on the economics of technological change by Maclaurin (1949) and on the conceptualization of technological innovation as a new combination of means of production.

2000-s and further

In the 2000s, innovation became more and more of a buzzword and a slogan. Any change in any aspect of life is now considered an innovation, even if it lacks underlying scientific rationale in many cases. Thus, innovation is no longer a purely scientific concept but rather a catchphrase for attracting investors, a useful term for top management to understand business success and failures, and a beautiful slogan for nice wording used in advertising campaigns for consumers' goods as well as political programs. Marketing (via advertisement) and public policy (via election promises and ambitious "Programs of Innovation Development") are the main spheres of discrediting the scientific concept of innovation.

However, "fundamental" innovation theories, such as the example national innovation system model, persisted and continue to evolve. Furthermore, complementary concepts, among others, emerge. The concept of financial innovation, the concept of eco-innovation, the concept of user innovation, the concept of social innovation, and the concept of collaborative innovation.

This trend of simplifying the innovation concept is not a disaster or something bad. However, it allows the identification of the driving forces behind this trend. These are:

- *the change of the essence of the scientific society among others*: The shift from the "closed science" model to the "open science model". Currently, the platform to discuss the problems of innovation is not only peer-reviewed journal and national and international

scientific conferences but also different thematic websites, such as http://www.innovation-creativity.com/
http://www.innovation-management.org/http://www.innovationexcellence.com/ among others. Since these sites are designed for audiences with different levels of education and knowledge, their main goal is explaining the complex concepts and models in simple words with attractive pictures and graphs in many cases without academic rigour in terminology.

- *a change in innovation models:* The era of "good old" fundamental models like the national innovation system model and evolutionary models of innovation is gradually drawing to its decline at least at their original setting. The main factor of this is the lack of reliable, comparable and "long term" (in terms of time-series length) country-level data on innovation activities and in many cases on R & D activities. The paradox of the situation is that we have well-developed fundamental models and strong mathematical tools for their implementation, but we lack data that should be downloaded into the models. So, the innovation models "had to" shift from the macro-level to the company level. Although these models are complex and based on different hypotheses about the firm's innovation strategy, they cannot be identified as the "ancestors" of for example, national innovation system models. Instead, they can be seen as a branch of this model or as a continuation of technology-push and market-pull models. These models are more suitable "for investors" or "for end-users" rather than these can be considered fundamental models. They use more fuzzy terminologies and more "visual", among others.
- *shifts in innovation policy:* National innovation policy gradually shifts from "top-down priority setting" to "bottom-up priorities setting". For example, the EU countries and other developed countries started to coordinate their national STI policies regarding responses to Grand Challenges. Such responses are linked with specific, sometimes uniquely localized segments, among others. Sectors, parts of the national innovation system. Their understanding and modelling require new terms and concepts; hence the old established concepts of innovation may not be applicable here. These concepts are specific by definition and cannot be comprehensive and commonly applicable concepts of innovation. For example, in developing responses to climate change the logic of product or process innovation can hardly be used. Instead, new innovation concepts such as eco-innovation and sustainable innovation should be friendly for environment innovation. Therefore, the main tasks for theoretical innovation studies and studies on the basic concepts of innovation will be the following: systematization of very broad and sometimes vague terminology, development of strict and easily applicable criteria for what can be treated as innovation, development of a more or less structured classification of innovation types and development of new, well-structured terminology for "almost innovation", "like innovation" and "close to innovation" changes (reforms, novelties, novation's, and so forth.) in design, process, organization, products, services, institutions, among others.

Innovation types

The analysis of the different approaches of the classification of innovation gives the following picture of innovation types:

Process innovation, product innovation, service innovation, among other 'classic types' of innovation, are included in many studies on innovation typologies (Block A in Table 1). The second cluster is the so-called "new" type of innovation. These originated five to ten years ago and had not yet become the "classic" ones. They include types of innovation such as frugal, red ocean, organic, red ocean, organic, and other numerous and in many cases "very exotic" from

the point of view of a strict terminology type of innovation (block B in Table 1). These types of innovation are used in models developed for the management of innovation and in business models for new products (services). Therefore, these types are more "attractive" and catchier than purely scientific and strict (in their definition). The third block refers to the types of innovation classified by their degree. Thus, radical, breakthrough or revolutionary innovation can be classified as "strong innovation" while non-drastic or minor innovation is treated as "weak innovation" (Block C, Table 1).

Finally, innovations can be classified in a dichotomic manner. In this case, the following controversial pairs of innovation types can be identified: open or closed innovation, radical or incremental, product or process and so on (Block D, Table 1).

Table 1
Summary of Innovation Types

Block A "Classical" types
Product innovation/Process innovation/Service innovation/Marketing innovation/Organizational innovation/Design innovation/supply chain innovation.
Block B "New" types
Frugal innovation/Red Ocean innovation/Blue Ocean innovation/Experience innovation/Value-migration innovation /business model innovation/organic innovation /
Block C "Innovativeness degree" type
Weak innovation Incremental/routine/minor/regular/non-drastic/basic innovation; medium strength Architectural/niche (creation)/modular/fusion/evolutionary/sustaining innovation; Strong Radical/major/breakthrough/disruptive/revolutionary/paradigm/fundamental/discrete innovation.
Block D "Dichotomical" types
User-driven/supply-side innovation Open/closed innovation Product/process innovation Incremental/radical innovation (and other examples of "strong"/" weak" classification of innovation) Continuous/discontinuous innovation Instrumental/ultimate innovation True/adoption innovation Original/reformulated innovation Innovation/renovations

Source: Authors' Adaptation from O'Sullivan and Dooley (2009).

Innovation and Competitiveness

In a highly volatile environment, innovation is the key to gaining a competitive advantage. It is a major driving force behind nation-state economic growth. The ability to innovate directly impacted the ability of individual firms in the national economy to compete. The values created by innovations are frequently manifested in new ways of doing things and new products and processes that contribute to wealth. When we consider a firm as a collection of resources, skills, and competencies, the effect of innovation is to transform a firm's inner capabilities, making it more adaptable, better able to learn, and more capable of exploiting new ideas. This increased adaptability is critical in the face of changing market conditions.

Innovation in Ghana

Although the subject of innovation has been relevant in practice and literature in developed countries since the early 1900s, it has only recently gained prominence in some developing and underdeveloped economies. This is because, in recent empirical and practical discussions, innovation has been identified as the mainstay of the entrepreneurial process and a major

determinant of business success and growth. Furthermore, numerous scholars in developed economies have identified that innovation significantly impacts employment and competitiveness. Though the concept of innovation has not gained much popularity in the empirical literature, it has been applied in several aspects of Ghana's economic and industrial spheres. Despite the fact that innovation is not a practice associated with most small and medium-sized enterprise owner-managers in recent times the concept was applied in several industries following independence, with the establishment of several state-owned companies channelling out highly competitive products. In addition, several other state-owned innovations were launched as trailblazers in African and Ghanaian innovation. These included the establishment of the Bonsu tyre factory, Amrahia dairy farms, a gold processing factory, and the Komenda sugar factory, all of which were to process and produce finished innovative products from their respective raw materials. According to the current author, these innovative initiatives and creating jobs, have positioned Ghana as one of the most dynamic economies in the world.

However, in terms of literature in Ghana, despite the scarcity of previous empirical studies, there has been a significant increase in the number of studies on innovation that have been published. These studies have evaluated various aspects of innovation, emphasising innovation adoption. The majority of studies on the adoption of innovation have primarily focused on the financial and banking sectors. Some researchers, on the other hand, evaluated innovation adoption in the agricultural industry.

The literature has also considered other facets of innovation apart from innovation adoption. In this respect, scholars have assessed the relationship shared between innovation and such concepts as market orientation and corporate social responsibility; business ownership and human capital; sustainable growth in agriculture and new product performance. More relevant to the current study, some previous studies on innovation assessed the nexus between the subject matter and entrepreneurship. Furthermore, the concentration of most of the empirical works was focused on small and medium scale firms. Scholars note this focus on the small and medium scale is necessary as a result of the established nexus between the role of SMEs and poverty alleviation, employment creation as well as promotion of economic development. Nonetheless, a considerable number of scholars have also performed some investigations concerning large companies such as firms in the banking industry (as well as some firms in the energy sector. Notably, despite the paucity of empirical evidence available about innovation in Ghana, a cursory consideration of the available evidence shows a tangential and circuitous assessment of the subject matter. This is proven by the lack of a substantial literature review on the subject of innovation in most of these empirical works. In connection to this, most of these studies did not attempt whatsoever to provide an operational definition for the term. In this respect, the current researcher believes that most of these scholars only adopted the descriptive use of the word and were not attempting to provide an in-depth analysis of innovation in the Ghanaian setting

Obstacles Hampering Innovation among Ghanaian Enterprises

Given the significance of innovation, what are some of the barriers that hamper the ability to innovate? Literature suggests there are many barriers to innovation and that these are both internal and external to a firm. The external barriers include the lack of infrastructure, deficiencies in education and training systems, inappropriate legislation, and overall neglect and misuse of talents in society. Some major internal barriers include rigid organizational

arrangements and procedures, hierarchical and formal communication structures, conservatism, conformity and lack of vision, resistance to change, and lack of motivation and risk-avoiding attitudes (Okpara & Wynn, 2007). Regarding barriers to innovation at a regional level, Wiig and Wood (1997) provide some key findings. The factors perceived as restrictive to product or process innovation include fear of imitation, high innovation costs, insufficient government support, lack of information, lack of qualified personnel, no market or insufficient knowledge about markets, and shortage of support or infrastructure in the nation.

The literature also suggests that there are several key elements in any economy for promoting innovation. First, the availability of a skilled workforce. Second, the presence of a strong regional technological infrastructure. Third, strong public support for innovation. Fourth, the importance of trade linkages. However, recognition of the key elements is not sufficient to make a nation innovative. As will be shown in this review, the process of innovation is far more complex.

METHODOLOGY

Research Design

The study assessed the effect of the obstacles to innovation among Ghanaian firms. A mixed research design was applied to determine the effect of obstacles to innovation faced by Ghanaian firms, how these obstacles affect the degree of innovation among Ghanaian firms and assess the effects of obstacles faced by firms on their innovations.

Source of Data

The study employed secondary data from enterprise survey data from the (ES) for Ghana, a firm-level survey conducted by the World Bank through standard methodology using expert field researchers and face-to-face questionnaires between December 2012 to July 2014. As described by the World Bank, the (ES) methodology aims to provide information on the universe of a firm's representative of an economy's private sector. The study categorized Ghanaian firms into three namely: small firms (1-19 Employees), medium firms (20-99 Employees) and large firms (100+ Employees). Data was collected from the World Bank online database. The main variables for the study are; obstacles and innovation (www.entreprisesurveys.org).

Measurement of Key Concepts

This section deals with appropriate ways of measuring the variables for the study. Innovation was measured based on new or improved products, new or improved products to establishment main market, improved method of manufacturing products, new or significant improved logistics, improved management practices and improved organizational structure among Ghanaian firms through the use of a table to show the extent to which various Ghanaian firms are affected. Whilst the various obstacles to innovation faced by Ghanaian firms, thus: access to finance, electricity, trade regulations, access to land, tax rates, corruption, practices of the informal sector, tax administration, political instability and transportation are measured based on their percentage effect on Ghanaian firms.

Population of the Study

Every study needs to identify and define the target population. This, according to the authors, must be as narrow as possible for the researcher to achieve the desired results. This is important, as it may be impossible or difficult for the researcher to reach the entire population. More so, defining the target population helps the researcher to save time, money and effort. It also helps

to focus the research and gives the study a contextual base for understanding its findings. Given this, the target population for this study includes Ghanaian enterprises within Greater Accra, Tema, Takoradi and Northern Ghana. The research population was on Ghanaian enterprises within Accra-Tema, Kumasi, Takoradi and Tamale. This population was chosen because of ease of accessibility and many Ghanaian enterprises sited in these parts of the country. This helped us to have a representative sample for our study (www.entreprisesurveys.org).

Study Sample

The research focused on business owners and top managers in seven hundred and twenty (720) firms interviewed from December 2012 through July 2014, whose operations fall under the following sectors: food, chemicals, Plastic and rubber, other manufacturing, retail, basic metals and fabricated metals, machinery and equipment, and other services. Ghanaian enterprises, thus the small (5-19), medium (20-99) and large (100+) scale enterprises were selected from these sectors (www.entreprisesurveys.org).

Sampling Procedure

The survey adopted a stratified random sampling method to obtain unbiased estimates for the whole population and the different subdivisions of the population (industry, establishment, size and region). For the Ghana survey, the population was defined as the non-agricultural economy focusing on registered establishments drawn from four representative geographical areas in Ghana thus, Accra-Tema, Takoradi, Kumasi and Tamale (www.entreprisesurveys.org). The eventual valid sample for this study is distributed as follows (Table 2).

Table 2

Categories of Firms and their Location

Region/Scale of business	Small	Medium	Large	Total
Accra- Tema	176	65	16	257
Takoradi	32	8	2	42
Northern Ghana	74	19	1	94
Kumasi	73	33	3	109
Grand Total	355	125	22	502

Source: www.entreprisesurveys.org.

Note (s): Small 5 5–19 employees; Medium 5 20–99 employees and Large 5 100 and above employees. Table 3. Sample distribution

Method of Data Analysis

The data were analysed using descriptive statistics and analytical approaches. This involved using chi square with the help us to analyse the degree of innovation among Ghanaian firms and the bar graph in illustrating the percentage effects of the obstacles faced by Ghanaian firms. This helps to achieve the first and second objectives of the study. Furthermore, it enabled us to come out with the final findings of the research. The results from the analysis are presented in frequency tables, bar graphs and Spearman's rank correlation. With the chi square, probability values (P-values) generated by the software package stata was used to test the statistical significance of the degree of innovation among Ghanaian firms at 1%, 5% and 10% to indicate whether the degree of innovation among Ghanaian firms is statistically significant. Furthermore, spearman's rank correlation was used to examine the relationship between obstacles faced by firms and their innovativeness. In order to identify whether there is a relationship, we used the spearman's rank correlation coefficients to determine the relationship between obstacles faced by firms and their innovativeness. Spearman's rank correlation is a

statistical test that is used to measure the association between paired data. It helps in determining the level of association among the variables in the study. Correlation analysis to show association among the variables in the study. Because it is good for showing association among paired variable, however, does not give the extent to which the variables are associated.

Chi-square is a statistical test used to compare observed results with expected results. It is used in studies for which parametric assumptions cannot be met. However, one of its limitations is that all participants measured must be independent, meaning that individuals or variables cannot fit in more than one category.

RESULTS AND DISCUSSION

This research discusses the obstacles faced by firms, degree of innovation among Ghanaian firms, and the correlation between the obstacles faced by Ghanaian firms and their innovation. Small firms are privately owned corporations, partnerships, or sole proprietorships with fewer employees and less annual revenue than regular-sized firms or corporations. The study considered five firms in Accra-Tema, Kumasi, Takoradi and Tamale that existed for more than ten years. Small firms range from five to fifteen employees under the world bank enterprise survey data, 2012. At the same time, small firms according to the study, include those whose operations fall under the following sectors: food, chemicals, Plastic and rubber, other manufacturing, retail, basic metals and fabricated metals, machinery and equipment, and other services. Also, medium firms are privately owned corporations, partnerships, or sole proprietorships which have medium employees and average annual revenue than smaller-sized firms or corporation. The study considered five firms in Accra-Tema, Kumasi, Takoradi and Tamale that have been in existence for more than ten years. Medium firms range from nineteen to ninety-nine employees under the World Bank Enterprise Survey data, 2012. In contrast, medium firms, according to the study, include those whose operations fall under the following sectors: food, chemicals, Plastic and rubber, other manufacturing, retail, basic metals and fabricated metals, machinery and equipment, and other services.

Finally, large firms are privately owned corporations, partnerships, or sole proprietorships with many employees and a sizeable yearly revenue. Five firms in Accra-Tema, Kumasi, Takoradi, and Tamale that have been in operation for more than ten years were studied. According to data from the 2012 World Bank Enterprise Survey, large firms have between thundered plus employees. According to the survey, large-sized firms operate in the following industries: food, chemicals, plastics and rubber, other manufacturing, retail, basic metals and fabricated metals, machinery and equipment, and other services.

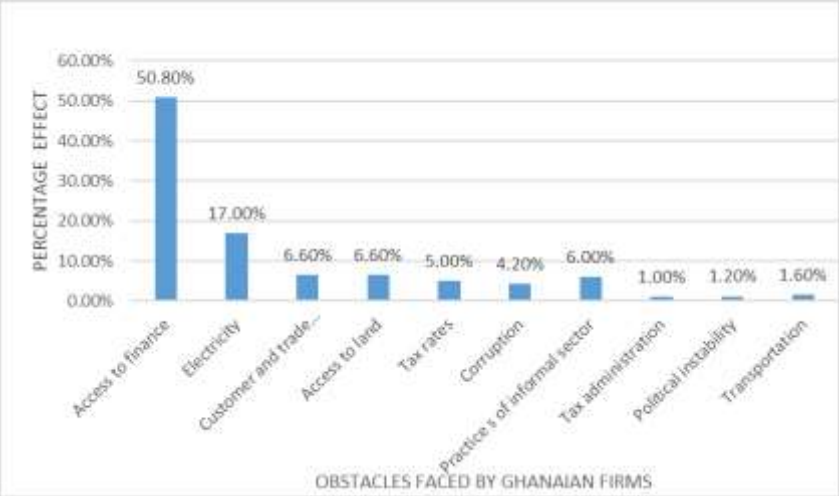
Obstacles faced by Ghanaian Firms

Figure 1 shows that about 51 per cent of Ghanaian firms are constrained by finance. This means that, out of a hundred Ghanaian firms, about fifty-one per cent of them are constrained financially. This is very alarming, and some of the reasons that could be adduced from this are probably because of lack of collateral security, poor business plans and lack of financial management knowledge, among others. This evidence shows that the findings of this study agree that lack of access to finance plays a major role in affecting firms' innovation.

The bar graph summary above clearly shows the percentage effect of the various obstacles faced by Ghanaian firms.

From Figure 1, about 17 per cent of Ghanaian firms are constrained by electricity. This means that, out of a hundred Ghanaian firms, about seventeen per cent of firms are constrained by

electricity. This could probably be as a result of inadequate finance, location of the firm, and power crisis among others. Based on the findings of these studies, it is evident to agree that lack of electricity plays a major role in affecting firms' growth and innovation.



Source: Authors' (2021), based on www.enterprisesurveys.org

Figure 1. Obstacles faced by Ghanaian firms.

In addition to the above mentioned, unfavourable customer and trade regulations distorts business operations. Therefore, from Figure 1, about 7 per cent of Ghanaian firms are constrained by customer trade regulations. This means that, out of a hundred Ghanaian firms, about seven per cent of them are constrained by customer and trade regulations. We need to take a second look at this because it may be due to the number of permits and approval firms need to obtain government legislations and a business license and permit services, among others. Therefore, from this study: it is evident to agree with the fact that customer and trade regulations hinder firms' growth and innovation. Furthermore, access to land creates a business environment conducive for firms to grow and innovate. Therefore, Figure 1, about 7 per cent of Ghanaian firms are constrained by land. This means that, out of a hundred Ghanaian firms, about seven per cent of them are constrained by land. This is serious, and some of the reasons that could be adduced from this are probably a lack of finance and land tenure system, among others. This supports the findings of Wang (2016) who found land as a major obstacle affecting firms' growth and their ability to innovate among Ghanaian firms. Therefore, it is evident to agree with the fact that lack of land access is a serious barrier to firms' growth and innovation. Moreover, tax rates can adversely affect business operations and hinder the potential of growth and innovation among firms. Therefore, from the graph above, about 5 per cent of Ghanaian firms are constrained by tax rates. This means that out of a hundred Ghanaian firms, about five per cent of them are constrained by tax rates. This could be because of government legislation, among others.

To add up to the above mentioned, corruption creates an unfavourable business environment by undermining the operational efficiency of firms and raising the costs and risks associated with doing business (Nassè, 2021). Therefore, from Figure 1, about 4 per cent of Ghanaian firms are constrained by corrupt practices. This means that out of a hundred Ghanaian firms, about four per cent of them are constrained by corrupt practices. This could be a result of inadequate supervision and low wages of employees, among others. In addition, practices of the informal

sector can affect growth and innovation among firms. Therefore, from Figure 1, about 6 per cent of Ghanaian firms are affected by practices of the informal sector. This means that out of a hundred Ghanaian firms, about six per cent of them are constrained by practices of the informal sector. This could be a result of a lack of access to finance, among others. Also, tax administration can affect firms' growth and innovation. Therefore, from Figure 1, about 1 per cent of Ghanaian firms are affected by tax administration. This means that out of a hundred Ghanaian firms, about one per cent of them are constrained by tax administration. Some of the reasons could be probably a result of improper tax administration, among others. Last but not least, political instability distorts the business environment and hinders growth and innovation among firms. Therefore, from the graph above, about 1 per cent of Ghanaian firms are constrained by political instability. This means that out of a hundred Ghanaian firms, about one per cent of them are constrained by political instability. This could be as a result of the rigging of elections so forth. This evidence shows that the findings of this study agree that political instability plays a role in affecting firms' growth and innovation in Ghana.

Finally, bad transportation can hinder the connection of the business to its supply chain partner, which will hinder the growth and innovation of most firms. Therefore, from Figure 1, about 2 per cent of Ghanaian firms are constrained by transportation. This means that out of a hundred Ghanaian firms, about two per cent of them are affected by transportation issues. This could be as a result of bad roads network, among others. Therefore, this evidence shows that the findings of this study are in agreement with the fact that transportation plays a role in affecting firms' growth and innovation.

Table 4

Degree of Innovation among Ghanaian Firms

New or significant improved product also new to the establishment's main market	**New or significant improved method of manufacturing product or offering services in last 3 years**		
	YES	**NO**	**TOTAL**
YES	147	40	188
	0.0	0.1	0.2
NO	133	42	176
	0.0	0.1	0.2
TOTAL	284	83	369
	0.1	0.3	0.4

Source: Authors (2021) based on www.enterprisesurveys.org

Pearson chi2 (4) = 0.4015 Pr = 0.982

From Table 4 above, we cross tab the various innovation indicators against each other such as new or improved products to establishment's main market against an improved method of manufacturing products to see if there is a greater degree of innovation among Ghanaian firms or not and the results of the chi-square shows clearly that, the probability value is 0.982 meaning it is not significant at 1%.

Table 5

Degree of Innovation among Ghanaian Firms

New significantly improved logistics, delivery, or distribution methods	**New or significantly improved organizational structures/management practices**		
	YES	**NO**	**TOTAL**
YES	257	77	337
	58.0	54.9	114.7
NO	83	296	379

	52.7	49.9	104.2
TOTAL	343	374	720
	111.4	105.4	220.1

Source: Authors (2021) based on www.enterprisesurveys.org

Pearson chi2 (4) = 220.0950 Pr = 0.000

From Table 5 above, we cross tab the various innovation indicators against each other such new or significant improved logistics against improved management practices to see if there is a greater degree of innovation among Ghanaian firms or not and the results of the chi square shows clearly that, the probability value is 0.000 meaning it is significant at 1%. Meaning there is a greater degree of innovation among Ghanaian firms.

Table 6

Degree of Innovation among Ghanaian Firms

New or significant improved organizational structure introduced in last 3 years	**New or significant improved marketing method introduced in last three years**		
	YES	**NO**	**TOTAL**
YES	217	59	277
	74.1	58.8	133.0
NO	100	342	443
	46.3	36.8	83.1
TOTAL	317	401	720
	120.4	95.6	216.1

Source: Authors (2021) based on www.enterprisesurveys.org

Pearson chi2 (2) = 216.1221 Pr = 0.000

From Table 6 above, we cross tab the various innovation indicators against each other such improved organizational structure against marketing method to see if there is a greater degree of innovation among Ghanaian firms or not and the results of the chi square shows clearly that, the probability value is 0.000 meaning it is significant at 1%. Meaning there is a greater degree of innovation among Ghanaian firms.

Table 7

Degree of Innovation among Ghanaian Firms.

During the last three years, did establishment spend on formal R&D activities?	**During the last 3 years, did establishment give employees time to develop new idea?**		
	YES	**NO**	**TOTAL**
YES	134	25	159
	83.4	53.2	136.8
NO	145	412	558
	24.3	15.5	39.9
TOTAL	281	438	720
	108.3	69.1	177.7

Source: Authors (2021) based on www.enterprisesurveys.org

Pearson chi2 (4) = 177.6769 Pr = 0.000

From Table 7 above, we cross tab the various innovation indicators against each other such research and development activities against employee's time to develop new ideas see if there is a greater degree of innovation among Ghanaian firms or not and the results of the chi square shows clearly that, the probability value is 0.000 meaning it is significant at 1%. Meaning there is a greater degree of innovation among Ghanaian firms.

To conclude, from the above findings: it can be seen that there is a greater degree of innovation among Ghanaian firms; therefore, we reject the null hypothesis of the study and conclude that the degree of innovation among Ghanaians has had some negative effect on firms since the

mitigation of these obstacles will lead to a less than proportionate change in the extent to which Ghanaian firms innovate.

Table 8

Relationship between Obstacles faced by Firms and their Innovativeness

	New or improved products	**New or improved products to establishment main market**	**Improved method of manufacturing products**	**New or significant improved logistics**
Access to finance	.	0.0937	0.0063	0.0480
Access to land	.	0.0425	0.0535	-0.0121
Corruption	.	-0.0109	0.0082	-0.0002
Political instability	.	-0.0235	0.1292	-0.0441
Tax administration	.	0.0321	0.0526	-0.0341
Tax rates	.	0.0348	0.0536	-0.0228
Transportation	.	0.1433	0.0072	0.1805
Customer and trade regulation	.	0.0572	0.0183	-0.0404
Practices informal sector	.	0.0475	0.0078	0.2016
Electricity	.	0.0960	0.0318	0.0601

	Improved management practices	**Improved organizational structure introduced**	**Marketing method introduced**	**Research and development activities**	**Employees time to develop new ideas**
Access to finance	0.0672	0.0955	0.0530	0.0008	0.3083
Access to land	0.0553	0.1013	0.0300	0.1022	0.1385
Corruption	0.0893	0.0077	-0.0424	0.0239	0.0638
Political instability	-0.0230	-0.0676	-0.0737	0.0731	0.0744
Tax administration	0.0474	0.0626	0.0552	0.0834	0.1200
Tax rates	0.0329	0.0683	0.0558	0.0673	0.1156
Transportation	-0.0786	0.0206	-0.0087	0.0197	0.0265
Customer and trade regulation	-0.0285	0.1161	0.0197	0.0120	0.0662
Practices informal sector	-0.0937	0.0129	-0.1027	0.0897	0.0004
Electricity	-0.1264	-0.0392	-0.0257	0.0224	0.0810

Source: Authors' (2021), based on www.enterprisesurveys.org

From Table 8 above, the vertical axis shows the various obstacles faced by Ghanaian firms and the horizontal axis shows innovation indicators used in the study. After cross tabbing the obstacles faced by firms against the innovation indicators, it can be seen clearly that: most of the coefficients for the obstacles faced by Ghanaian firms against the innovation indicators are positively correlated with only a few negatively correlated. Moreover, weakly correlated because almost all the coefficients are below zero point five. For instance, from the correlation results above: access to finance and new or improved products to establishment main market are positively correlated meaning Ghanaian firms need more finance in order to be able to introduce new or significantly improved products to establishment main market. Whilst corruption and political instability among others are negatively correlated with new or improved products to the establishment main market, a decrease or elimination of these obstacles will increase firms' ability to introduce more new or significantly improved products to the establishment main market others.

From the above findings: it can be seen that obstacles faced by firms on their innovation are strongly negatively correlated. Therefore, we reject the null hypothesis of the study and conclude that obstacles faced by firms have a relationship with the degree of innovation among

Ghanaians. The mitigation of these obstacles will lead to a less than proportionate change in the degree of a firm's innovation. It can be seen that obstacles faced by firms negatively affect firms 'degree of innovation among Ghanaian firms. Furthermore, obstacles faced by firms have a negative relationship with firms' innovativeness. Therefore, we reject the null hypotheses of the study and conclude that obstacles faced by Ghanaian firms affect their degree of innovation.

CONCLUSION AND RECOMMENDATION

The study determined how obstacles faced by Ghanaian firms affects firm's innovativeness in Ghanaians, where focus was on how these obstacles affect firm's innovativeness. Considering how the various indicators of innovation can help increase firm's innovativeness and how obstacles faced by Ghanaian firms affect firm's innovativeness. From the -square method used in the study's analysis, we realized a greater degree of innovation among Ghanaian firms. Meaning, in Ghana when the indicators to innovation are well-considered among firms, it will increase their innovativeness. The Spearman rank correlation method we used in this study's analysis, we realized there is an association between obstacles faced by firms and their innovativeness. Thus, to say firm's innovativeness is dependent on mitigating the obstacles faced by firms. This will help make firm's survival and expansion very easy. Therefore, the study concludes that, obstacles faced by Ghanaian firms generally have a negative effect on firm's innovativeness.

Recommendations

The study unveiled that general obstacles faced by Ghanaian firms affect firms' innovativeness in Ghanaians. Therefore, with these findings, policymakers and firms are called upon to design appropriate policies and as well adopt effective and efficient strategies that will address the challenges relating to access to finance, electricity, access to land, customs and trade regulations, practices of the informal sector and tax rates among others. There is the need to encourage the right entrepreneur leadership in the management of companies (Carbonell & Nassè, 2021) and fair practices (Nassè, 2022) in the Ghanaian context. Moreover, firms need to be educated and encouraged to adopt the various indicators of innovation such as research and development activities, employees' time to develop new ideas, an improved method of manufacturing products and new or significant improved logistics, among others. Although the findings of this study add to our understanding of barriers Ghanaian firms face on their innovativeness. It further helps firms and policymakers know areas to channel their energy and focus to boost innovation among Ghanaian firms. Thus, innovation could help Ghana eradicate inflation by reducing the side effects of demand-pull conditions and cost-push conditions on the economy.

Future Research

It will be good to make the link between entrepreneurship and innovation in the sector of SMEs in Ghana

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Acknowledgements

The researchers hereby acknowledges the efforts made by the Dr. Théophile Bindeouè Nassè and the editorial board of the International Journal of Management and Entrepreneurship Research and to the editorial to improve the quality of this paper.

Conflict of Interest Statement

No conflict of interest has been declared by the authors.