

# **SERVICE INNOVATION IN TELECOMMUNICATION SECTOR OF GHANA: A UNIVERSITY-INDUSTRY COOPERATION APPROACH TOWARDS ENHANCING INNOVATION CAPABILITIES**

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## **Abstract**

*Innovation is critical to the success of firms in this rapidly changing business environment. Despite this fact some firms fail to innovate and this affects the performance of such enterprises. The central theme of this study is to boost the service innovation capabilities of firms within the telecommunication industry in Ghana by encouraging cooperation between university and industries. This study dived into a theoretical approach to assess the state of service innovation, university and industry cooperation and its benefits towards developing firm's innovation capabilities. Furthermore, the study proposes a cooperation framework involving all relevant actors from various stakeholders to facilitate university-industry cooperation within the telecommunication sector. The paper also formulated theoretical prepositions that can be tested empirically in further studies.*

**Keywords:** *Innovation, Service Innovation, University-Industry Cooperation, Telecommunication Firm, Competitive Advantage, Ghana*

## INTRODUCTION

In an era that services dominate most developed and developing economies as opposed to manufacturing in previous times. This is evidence according to the number of firms providing diverse form of services outside the manufacturing sector. This has resulted in most economies switching to a knowledge base one. Therefore for firms to survive in this form of economy there is the urgent need to innovate value added services so as to be competitive (Maglio & Spohrer, 2008; Ostrom *et al*, 2010). This has resulted in the restructuring of most service organization's business model to encompass diverse form of actor both within and outside a particular industry. The design of this new ecosystem is to attract surplus knowledge outside the organization to aid in the innovation process. The exchange of resources in this network aids in the development of value added services (Porter, 1985; Allee, 2002). Valued added service leads to customer satisfaction, trust and customer's confidence in a firm and an increase in firm's loyal customer base (Ackah *et al*, 2014; Arvanitis, Kubli, & Woerter, 2008). Furthermore, firms with higher innovative capabilities turn to gain competitive advantage over others in the same industry. And contribute to the national competitive advantage (Ness, 2009; Allee, 2008; Allee & Taug, 2006).

Despite the numerous merits associated with an innovative organization, there are some hurdles that affect the attainment of full efficiency of the entire process. These include high cost of research and development, lack of expertise in specific domains, inadequate resource in terms of funds and personnel and competition among rival organization (Veugelers & Cassiman, 2005). Therefore to achieve efficiency in the service innovation process, firms need to move from a more linear approach to a more complex one that accounts for all stakeholders. This is motivated by the resource-based view theory proposed by Penrose (1956), where internal resources can be leverage to acquire knowledge from external actors within the external environment of a firm. The sharing of knowledge and resource between parties enables an effective innovation process and also lowest the cost of research and development relatively. Furthermore, it eliminates waste and speed up development stage of innovative product or service since users and other stakeholders are involved in right from the onset.

The Telecommunication sector of Ghana is dominated by the mobile sector, thus providing services such as mobile phone calls and data services, and mobile money (form of financial transactions with the aid of mobile platform and device). Over recent years, the industry has seemed major growth with mobile phone subscription rate increasing astronomically. Mobile number subscription rate amounts to 26 million in a population of 25 million citizens (NCA, 2013). This is evidently that this sector of the economy is highly patronized. Firms turn to makes higher returns on investment with this number of subscribers.

Therefore contributing to national economy through generation of employment since most firms in this industry operates on a 10 years tax-free initiative from government. This makes it impossible for government to gain revenue from this sector in terms of taxes. This creating employment serves to be the major form of benefit that the society derives from this sector. Despite the increase in revenue and technological infrastructure, there still exist a number of factors that has hinder the development of this sector leading to the folding up of telecommunication firms, for instance Expresso Ghana Limited nearly folded up in 2014 where subscribers could not make or receive calls. The folding up of these firms is not as a result of neither financial nor technical constraints but rather inability of these firms to innovate to create value added service that satisfies its user base. A survey conducted by the National Communication Authority in 2013 on the satisfaction of mobile phone service users revealed that despite most respondent reported to be satisfy with current situations, a few essential factors arises. And this includes users' enthusiasm to be able to perform more functional with their mobile device than just receiving and sending phone calls and text messages. Furthermore, the low penetration rate of personal computers (16% penetration rate as at 2012), as compared to other developed countries (Frempong, 2012). This provides telecommunication industry a significant opportunity to develop mobile-based innovative service to serve diverse purposes in Health, Manufacturing, Agriculture and other sectors.

In this study, the central theme is to enhance the service innovation capability of firms within the telecommunication industry by encouraging cooperation between universities and service providers. As elaborated by numerous scholars, university- industry cooperation results in the development of value added products and services through knowledge and information sharing and creation (Geisler, 1995; Sutz, 2000; Tether, 2002; Poyago-Theoloky et al 2002; Elisa & Valeria, 2009; Feng, Ma, Zhang, & Du, 2012). Despite these merits associated with university industry cooperation, there happens to be a different scenario in developing economy such as Ghana. There happens to be lack of university-industry cooperation. And this is attributed to a number of factors that includes, firms not aware of the research carried out in various universities and research centers, the basic research nature of research carried out by institutions, lack of adequate policies and laws in area of Intellectual Property rights protection and governance structure of this cooperation (Dehsi & Chadha, 1995; Mouton et al, 2008; Belete, 2009).

Furthermore, the purpose of this study is to develop a framework that will serve as a roadmap toward adopting university- industry cooperation between the telecommunication industry, universities and the entire actors in the ICT ecosystem.

The section 2 that follows will focus on the theoretical background that serve as a base for the development of theoretical framework, section 3 focus on the framework developed emphasizing on the various actors and roles that each actor plays in order to achieve the collective goal in the governance structure of the proposed cooperation framework and section 4 discuss the conclusion of the study.

## **THEORETICAL BACKGROUND**

### **Service Innovation Capabilities and Firm Performance**

Service-oriented business activities non-arguably have taken over the economy activities of most countries (Bitner & Brown, 2008; Bowen & Ford, 2002). The characteristics of the service industry make it more dynamic and complex one. Therefore for firms to survive this era of change there is the essential need to innovate valued added services in order to have loyal customers, have access to new markets and also gain competitive advantage over other firms (Porter 1986). Although firms performance and development is based on its innovation abilities some firms especially in the service industry is neglected to some extent. A number of reasons that includes but not limited to the inability of firms absorption of both existing and external knowledge, high cost research, lack of resources hinders the service innovation process. Therefore for firms to survive and be competitive there is the need to shift the innovation paradigm to a more customer-oriented approach than previous product focus one (Pensore, 1956; Geisler, 1995; Tether, 2002; Lusch *et al*, 2007).

Furthermore, for firms to be innovative in order to create a dynamic service industry that creates value added services for customers, firms need to have the needed absorption capabilities to tap into knowledge and information available in its external environment (Chesborough, 2005). For firms to innovate there is the need to make efficient use of both internal and external resources in its business environment. Some scholars argue that in order to achieve effective service innovation process there is the need to integrate service innovation and firm's competitive strategy (Allee, 2008; Allee & Taug, 2006). Due to the unique nature of service innovation from product innovation firms need to have a long-term view of its innovation strategy rather than a short-time one. Also instead of firm-oriented form of innovation appraisal process it should turn into a more customer-oriented approach (Heskett, 1987). Based on the elaborated literature above, the proposition below is formulated:

*P1a: Firms' ability to design and develop services of high value and quality is related to the firm's service innovation capabilities.*

*P1b: Firms' performance is related to its service innovation capabilities.*

### **Improving Service Innovation of firms in Telecommunication industry**

The telecommunication industry in Ghana is characterized by a set of unique factors that makes this environment a dynamic one and shows great potency of improvement. Since the introduction and implementation of telecommunication services over two decades, the industry has grown out in terms of number of firms offering telecommunication services and diverse forms of products for a wide range of applications. Furthermore, this sector happens to be a major source of national GDP (NCA, 2013; GSS, 2012). Therefore the sustainable development of this sector is a key factor for achieving both national development and competitive advantage.

Despite the promising impact of this sector the economy most firms over the years have run out of business through acquisitions, buyouts and others. Although there are enormous factors that explains the shift in this industry, firm's inability to develop innovative quality service have contributed to the failure of some firms. For instance in a customer satisfaction survey carried out by National Communication Authority in 2013 reported that despite customers were satisfy with prevailing services there was urgent consents about the quality of call service signals, un-scalable platforms coupled with call interruptions and jamming. And this is critical to the development of any firm in this sector in order to avoid loss in market share. And this is evidently see during the mobile number portability process, where individuals can shift to one service provider to another without losing it previous cell phone number. Due to this process individuals that happens not to be satisfy with a particular service provider turns to its competitor for better services.

Insofar to achieve highly innovative services whiles cutting down cost associated with research and development of new service lines and processes. Firms should be able to tap into external knowledge through the formation of alliances with external parties. And this open form of innovation has proved to have enormous benefits for firms and third party involved (Chesbrough, 2005; Allee and Taug, 2006). Therefore in order to attain a sustainable development of innovative services in the telecommunication sector, the ability of telecommunication firms to partner universities, researcher centers and government agencies is critical to its service innovation process. University- Industry cooperation is an alternative option to achieve high innovative service that is of great value and quality at relatively lower cost. Despite the viability of this option it turns out that there is a low acceptance of University- Industry cooperation in Africa, which Ghana is no exception (Ssebuwufu et al, 2012). Reason for low participation in this form of alliance is attributed to a number of factors such as the unpractical nature of education of university students in African countries, lack of motivation for Applied Research and firms perception about losing out to competitors through the availability of

certain essential information that is made public through this alliance. Also lack of research funds hinders the process of this form of cooperation negatively (Zezeza, 2004; Goransson & Brundenius, 2011). The preposition below is formulated based on the above-elaborated literature:

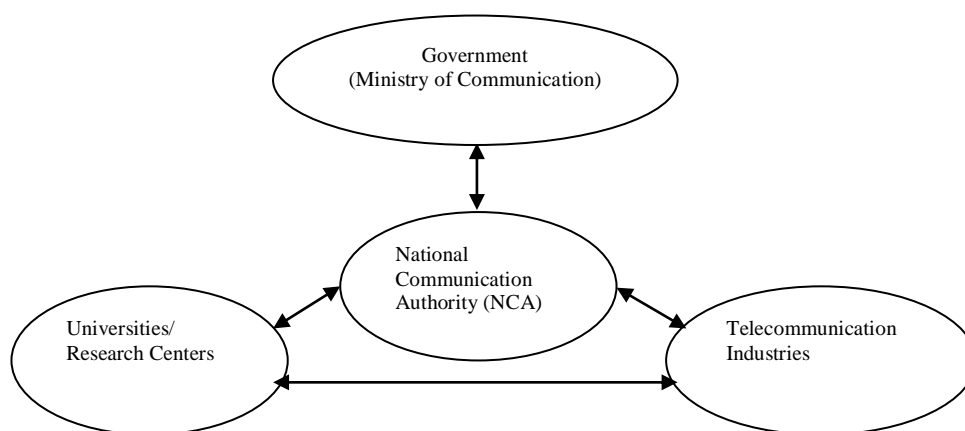
*P2: When firms within the telecommunication are able to form alliances with universities and research centers aid to improve the service innovation process.*

## COOPERATION FRAMEWORK AND GOVERNANCE STRUCTURE

### Cooperation Framework

The central theme of this study is to identify how firms within the telecommunication industry in Ghana can boost its service innovation capabilities through adaptation of University-Industry cooperation. This section presents proposed models that will facility this form of alliance in order to achieve efficiency and boost sustainable development of this sector. Since is a major contributor to national development and sustainability. Therefore a sustainable sector would boost economy development and promote value creation that can have a positive impact on the diffusion of technology in entire sub-region. This framework encompasses various actors that include government control though it's Ministries, Supervisory Service by the National Communication Authority, the firms within telecommunication industry and University and Research facilities.

Figure 1: University-Industry Cooperation Framework



This framework turns to promote the involvement of all the various actors in order to achieve effective service innovation process. The interaction of diverse actors within this ecosystem provides the essential question of how this interaction is to be governed so as to achieve an

effective process. The issue of social power among various actors in a social structure cannot be underestimated so as to avoid structural holes within social networks with strong ties (Granovetter, 1985). Therefore to attain continuity of this process there should be balance of power among actors so as to produce the needed social capital that is expected from this form of alliance. Also the embedded nature of actors in this network makes it essential to have in place a clear governance plan or structure so as to boost information and knowledge transfer process. And this has a positive impact on the entire service innovation process. The roles of the actors involved in the framework above are defined in the Governance Structure below.

### **Governance Structure**

The roles of each actor involved in the framework (figure 1) above for effective governance are explained in the paragraphs below:

**Government:** The central government plays an essential role in the attainment of the objective of this cooperation. That is to promote service innovation capabilities of firms within the telecommunication industry. In Africa and for that matter Ghana, that seems to have a low participation of University and Industry cooperation as compared to other developed and transition economies. The central government therefore has a critical role if this form of cooperation will be effective in the long run. In the model proposed above the central government through its Minister of Communication will formulate and streamline ICT policies in relation to building a more innovation telecommunication sector. These policies will serve as a direction for future innovation research and development. In setting this objective there is the need to take into consideration a number of factors such as where government wants to see its ICT sector in a given period of time, the availability of resources and expertise and others. Also one significant factor that has hindered the progress of University-Industry cooperation in Ghana is the lack of research funds. Therefore one critical role the government plays, as part of this ecosystem is to provide research funds for the conducting of research that is in line with the stipulated national objective in relation to the telecommunication sector. Also apart from provision of funds for research, government needs to provide comfortable environment that will reward firms that enter into this form of alliance. Furthermore, selection criteria should be clearly defined without any form of ambiguity. For instance, since the motive of this cooperation is to boost the service innovation capabilities of firms within the telecommunication industry, the selection criteria should state that for firms to be able to access this research fund to improve on its products and services, it should do that jointly with a relevant university, research institution or facility. Also government should integrate into its policy as to how ownership of intellectual property derived from this form of project.



**Supervisory Activity (National Communication Authority):** Innovation and for that matter service innovation cannot thrive without the aid of supporting or complementary activities. The National Communication Authority is tasked to supervise almost all ICT firms involved in the communication activities. Therefore to achieve an effective telecommunication sector through the establishment of government objective and provision of funds, there is the essential need to provide monitoring service as to who has access to this fund and on what grounds or criteria associated with the selection process. Furthermore, since government ministries are tasked with a lot of diverse activities, a supervisory body is essential as to assess whether funds are being channeled into the right projects, evaluate the selection criteria, and also examine the impact of service innovation process and impact of firms service development.

**Firm:** To achieve the stated objective of this model the firm is a critical actor since it has the real world experience of this industry. Therefore a joint research project between firm and the university or research center in the long run will boost the development of high value services. The firm has the needed industrial expertise and personnel's that can contribute to as to what direction the research should be carried. The firm is familiar with the expectations and demands of customers or users. Therefore to develop or design customer-oriented applications or solutions the inputs of firms is an essential step. Also the communication and information sharing between industrial players and the research entity involved aid to promote high value applied research.

**University/Research Facilities:** The basic role of universities and research facilities in this model or framework is to conduct applied research that focus on real world problems. The notion about how universities carried out research should shift from conducting academic basic research that is barely relevant to the business environment practically. In this framework, university is charged with the responsibility of conducting Applied Scientific research that tackles eminent problems in real world situation. In doing so universities would have the liberty to train its students into conducting real world research using industrial experience as leverage. And this promotes a win-win situation for all parties since graduates from this institution come out of school prepared for the real world. This is due to the fact that students are equipped with the right tools and skills needed to solve problems analytically and creatively. Furthermore, it provides universities the needed funds to enhance the research process and capabilities respectively.



## CONCLUSION AND FURTHER RESEARCH

This study focuses on how to boost service innovation capabilities of firms within the telecommunication industry in Ghana. This study is motivated by several factors that have affected the progress dynamics of this particular industry. Over the years, firms within this sector have folded up due to the lack of innovation in its services. Therefore makes it difficult to create value for its customers. The study reviewed various literatures on this matter and further proposed a set of prepositions. A model or framework that will boost service innovation among firms was proposed. This model seeks to improve service innovation by encouraging firm to joint research cooperation with relevant universities and research facilities.

Due to the significant contribution of this sector to the development of national economy, university-industry cooperation is an alternative way for boosting service innovation and creating value. Firms can gain competitive advantage through this process while cutting down cost and having access to a wide variety of relevant resources outside the organization.

Despite this, the study contribute to both academic knowledge and also how government policy needs to be channeled so as to improve the service innovation process. This study had some constraints and this limits the generalization of this theory. To validate the impact of university-industry cooperation on the service innovation process there is the need to test the stated preposition empirically so as to ascertain its reliability. Also to generalize further studies, the sample size for further research should include all five (5) major telecommunication firms.

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