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RESEARCH ARTICLE

Organisational adoption of telecommuting: Evidence from a developing country

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Abstract

Even though telecommuting has been a growing phenomenon in the more advanced world over the past 2 decades, businesses in Africa and more specifically West Africa are yet to adopt the practice, hence providing a gap for research into telecommuting in a developing country such as Ghana to be filled. The study sought to investigate the technological, environmental, and organisational factors that influence telecommuting adoption and to also examine the potential benefits of adopting telecommuting in the operations of Ericsson Ghana.

Technology–organisation–environment (TOE) framework was used as the guiding lens. The study, from the critical realism perspective, adopted the qualitative research approach. Hence, Ericsson Ghana was selected as the case. Miles and Huberman's transcendental realism data analysis approach was used for the case study.

This study's findings established that the staff and the company as a whole benefited from the adoption of telecommuting practices. The study also identified some factors that influence the adoption of telecommuting. Contribution is therefore made by the findings of the study to the body of knowledge by probing into strategies and guidelines for implementing telecommuting in Ghana and to a larger extent West Africa. Arguably, few studies have been conducted on telecommuting from a developing economy's perspective using the TOE framework. Again, this study provides the guideline for policy discourse in relation to telecommuting adoption in Ghana. The originality of this study lies in the ability to identify an organisation in a developing country such as Ghana, which has institutionalised telecommuting practices for a case study.

KEYWORDS

critical realism, developing countries, telecommuting adoption, TOE framework

1 | INTRODUCTION

Gradually, there is a paradigm swing from the normal way of work to telework, also known as telecommuting. The rapid development of the internet and telecommunications tools coupled up with the increasing speed of information exchange have become a major influence on the trend for business to allow alternative working environment where staff of firms remotely undertake their tasks, away from their workplace, which is permissible by the firms' regulations (Ye, 2012). Manochehri and Pinkerton (2003) see telecommuting to be a phenomenon whereby employees of an organisation work away from their office, one or more days per week through the use of a computer with telecommunications facilities. There has been a significant growth in the practice of telecommuting since the 1990s. This is as a result of the increase in pressure on companies to increase productivity while cutting their operational costs.

Telecommuting, which is seen to be an alternative to the routine arrangements whereby workers undertake their duties, has in recent years undergone tremendous changes. Ye (2012) postulates that firms are now being compelled to introduce more flexible ways for the new "corporate office" owing to the employees now being able to access data. Voice and other internet-enabled services in their homes have made telecommuting an important business practice. Studies on telecommuting have indicated that at 2009, the percentage of firms engaging teleworkers had within 4 years doubled from 25% in the year 2003 to 50% in the year 2007 (European Foundation for the Improvement of Living and Working Conditions, 2010). Many telecommunications companies, such as Ericsson, Siemens, Yahoo, Vattenfall, and Telia in an effort to reduce workspace, have implemented flexible offices (Boell, Cecez-Kecmanovic, & Campbell, 2014; Robèrt & Börjesson, 2006). This telecommuting phenomenon is likely to grow

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higher in intensity given the increasing concern of workers with regard to their personal security, and also increasing rise in the prices of fuel on the employees' side and the need to reduce workspace on the employers' side. Potter (2003) indicated that the terrorist attack on September 11, 2001, on the Pentagon and the World Trade Center and the ensuing anthrax threats have therefore renewed the interest in telecommuting by both business owners and workers alike.

As stated earlier, the paradigm shift from traditional way of work to telecommuting where employees remotely perform their tasks outside of the place of work, which is in accordance with regulations of their firms, has attracted a lot of studies on the phenomenon. These studies have been conducted from several dimensions; one of these dimensions is the technological dimension, where research was made into the specific technological infrastructure and skills needed to implement and operate telecommuting (Gregg, 2011; Simpson, Daws, Pini, & Wood, 2003). Also, there is the societal dimension, where studies have been conducted into increasing sustainability by reducing carbon emission, and also decreasing dependence on fuel imports (Kanellopoulos, 2011; Pyöriä, 2011).

Furthermore, these studies from the dimensions of employees and productivity were conducted to establish a relationship between increased productivity as a result of teleworking (Gajendran & Harrison, 2007; Mann & Holdsworth, 2003). Even though telecommuting has been a growing phenomenon in the more advanced world over the past 2 decades, businesses in Africa and more specifically West Africa are yet to adopt the practice. There is no gainsaying that telecommuting provides businesses and employees with benefits such as workforce empowerment, employee job flexibility, and increased productivity; yet the reasons are not readily forthcoming as to why businesses and even governments in West Africa, and more specifically Ghana, have not taken advantage of it. Hence, the study seeks to investigate the technological, environmental, and organisational factors that influence telecommuting adoption using Ericsson Ghana as a case study and also examine the potential benefits of adopting telecommuting in the operations of Ericsson Ghana. Therefore, the paper is structured into 6 sections. The first section is the introduction to the paper. The second section presents a brief overview of telecommuting by reviewing literature on telecommuting adoption that enabled the development of a research framework for the study. The third section discusses the research methods used in this research. The fourth section presents the analysis while the discussion of findings is presented in the fifth section. The last section concludes the paper with research and policy implications.

2 | TELECOMMUTING LITERATURE REVIEW

This section presents a review of contemporary and pertinent literature related to telecommuting. The section consists of an overview of research that pertains to the conceptual understanding of telecommuting, in terms of impacts and conceptual approaches to the study of telecommuting adoption.

2.1 | Impact of telecommuting

Many employees and organisations are considering or have adopted telecommuting for numerous reasons. These reasons include but are not limited to the quest to improve employees' job satisfaction or to minimise the organisation's operational costs. Telecommuting affects individual workers, organisations, and the community in various ways (Khoury, 2009). This section explores the effects of telecommuting on these different groups through the analysis of telecommuting literature. This helped to gain a broader understanding of the effects of telecommuting to provide ideas for further research.

2.1.1 | Impact of telecommuting on individual workers

The individual workers in the organisation receive the major impact in the adoption of telecommuting. These individuals telecommute and hence receive the direct impact from telecommuting practices. These impacts are positive and sometimes negative to the individuals.

One positive impact of telecommuting on individual workers is that they do not commute back and forth to work and hence are able to cut down on transportation cost (Hunton, 2005). In relation to cutting down on cost, the individual workers are therefore able to have an improved balance between their work and life at home. An improved job satisfaction leads to highly motivated workers when telecommuting is adopted. Telecommuting, in addition, provide numerous benefits to the individual workers, which include better social life, improved time management, flexible working hours, less pressure on workers, and homebound employees' ability to also work (Crandall & Gao, 2005; Nosek, Mandviwalla, & Kock, 1998).

Even though there are numerous advantages in the adoption of telecommuting by individual workers, there are also some disadvantages. These disadvantages have compelled some employees to stay away from telecommuting (Topi, 2004). For instance, in Portugal, surveys on workers have shown that the employees feared that their supervisors were going to become more separated from them when telecommuting is introduced (Nunes, 2005). In addition, the workers' resistance to telecommuting was as a result of the fear of being isolated in the telecommuting environment. Nunes (2005) asserts that employees mostly prefer to develop a reputation and status for themselves in the company of their colleagues when they are physically together. Unfortunately, visibility is minimised in telecommuting environments. The employees are therefore forced to visit the workplace regularly owing to the fear of being perceived not to be committed or forgotten by colleagues (Elsbach & Bechky, 2007; Thatcher & Zhu, 2006).

More personal conflicts can also be experienced when employees work from their homes. Khalifa and Davison (2008) assert that family members, colleague workers, and others are directly affected by telecommuting even though they are not the adopters of the innovation. According to Hunton (2005), the traditional workers experience less conflicts among their families and friends when compared to those workers who telecommute. The less time that the workers spend with their families and friends accounts for this problem. Again, the rate of interruptions in work is seen to be higher, lasting for an average of 2 hours for workers who exclusively work from their homes. In summarising the negative impact of telecommuting, Navarrete and Pick (2003) outlined the feeling of isolation through being away from the office, inability to separate work issues from family issues, thus leading to work–family conflict, and the inability of management to effectively monitor and evaluate the employees to be some of the impediments to the adoption of telecommuting by employees.

2.1.2 | Impact of telecommuting on the organisation

In another breadth, telecommuting does not only change the individual and the work group patterns, but it also has an impact on the organisation as a whole. One major change involves the set-up of functions of support within the firm. These supports should be capable of offering the needed assistance to the various personnel and other workgroups scattered in the locality. The operations of the support group will even have to be extended beyond the regular working hours to offer the needed support to the employees in the different time zones. The organisation must also be able to offer the equipment and other supplies for the workers who telecommute (Bose & Luo, 2011). In this case, telecommuting creates some form of challenge to the firms who do not have the needed funds and resources to assist the staff who wish to telecommute. In addition, investments in information and communications technology and network infrastructure are supposed to be made to enable for telecommuting to be performed. Again, policies are supposed to be developed to protect the firm's resources (Gajendran & Harrison, 2007).

Another major challenge that the organisation faces is the development of comprehensive training workshops to provide the workers the requisite skills to adopt and practice telecommuting. Managers and supervisors for instance will have to be trained on ways to manage the workers effectively from their remote locations when telecommuting. This is because the supervisors will not be able to monitor the employees throughout the day, and hence, they will need to find ways of effectively monitoring the performance of the workers (Khoury, 2009). Dimitrova (2003) also asserts that as a result of the varied approaches in the implementation of telecommuting, it becomes difficult to find a single best way of supervision. It is therefore suggested for organisations to first analyse their approach carefully before implementation.

The organisation is also confronted with the issue of data security during telecommuting. The security of data has been a topical issue for organisations in recent times. According to Crandall and Gao (2005), "security issues raise questions as to how much and what type of work should transpire in the home environment." Issues relating to data breaches have brought negative attentions to firms and have even made national headlines in recent times. These breaches have led to the firms involved to lose revenue in the form of image repair cost, legal cost, and also customer notification cost. A major cause of these breaches is guests' access to the organisation's sensitive information in the homes of telecommuting employees.

On the other hand, firms who practice telecommuting receive some benefits as well. A number of research works have highlighted the numerous benefits of telecommuting for organisations. These benefits consist of increasing company revenues, reducing absenteeism, increasing productivity, reducing turnover, reducing traffic congestion, reducing costs associated with office space, reducing air pollution, and conserving fuel (Bose & Luo, 2011; Khoury, 2009). These benefits are said to be substantial since they help the firm to run more effectively.

In relation to the threat of direct terrorist attacks, telecommuting does not allow the employees to converge at a single location to work. In addition, telecommuting offers opportunities to people who were previously not available to work. These people include the disabled, nursing mothers, and people who live too far from the firm.

2.2 | Conceptual approaches to telecommuting studies

The technology acceptance model (Gurtner, Reinhardt, & Soyez, 2014) and the technology readiness theory by Wu (2013) are two of the studied subjects on innovation adoption. This study adopts the technology–organisation–environment (TOE) framework as a guiding lens owing to its ability to study adoption from an organisational perspective.

2.3 | TOE framework

The TOE framework was developed by Tornatzky and Fleisher (1990) to study the adoption of technological innovations in organisations. The framework is an organisation-level theory that offers an explanation in relation to the 3 major elements of an organisation that affects its decision on the adoption of a technology. The 3 elements include the technological context, the organisational context, and the environmental context. According to Baker (2012), these 3 elements collectively influence the adoption of an innovation by a firm. These 3 elements further pose as either opportunities or constraints. It is therefore asserted that the 3 principal elements—technology, organisation, and environment—influence the way a firm adopts and accepts a technological innovation (Lippert & Govindarajulu, 2006).

The technological context refers to as all the technologies found either within or outside the organisation. It also involves the perceived relative advantages from the technological innovation as well as its compatibility, which consists of both the technical and organisational observability and complexity in learning how to use it and its trialability—experimentation or pilot tests (Awa, Ukoha, & Emecheta, 2012). The resources of the firm

including its characteristics, culture, the size of the firm, and the communications processes make up the organisational context (Baker, 2012). Finally, the space within which the firm performs its business operations make up the environmental context (Scupola, 2009), and it consists of the regulatory environment, structure of the industry, and the presence of competitors (Baker, 2012).

2.3.1 | The TOE framework in information systems research

The TOE as an adoption framework has been studied comprehensively in information systems research with regard to factors that influence the organisations' adoption decision (Ortbach, Brockmann, & Stieglitz, 2014). It has a consistent support from a solid theoretical basis, which makes it possible for application across various studies on information systems innovations (Oliveira & Martins, 2010).

As a result of the explanatory power of the TOE framework, it has been used in extant research across different contexts including technological, industrial, and national contexts. A number of studies on technological innovations have used this framework. These studies include electronic learning (Ansong, Boateng, Boateng, & Effah, 2016; Namisiko, Munialo, & Nyongesa, 2014; Raouf, Naser, & Jassim, 2012), e-business (Thong, 1999; Zhu, Kraemer, & Xu, 2003), and cloud computing (Angeles, 2013).

Coming from the backdrop of the instances cited above, Thong (1999), after a review of theories on the literature of technological innovations, developed an integrated model to study the adoption of information systems by small businesses. His model consisted of primary variables that were contextually selected such as the features of the information system, the characteristics of the decision-maker as well as the characteristics of the organisations, and the environment characteristics as primary determinants of information systems adoption in small businesses. A questionnaire survey of 166 small businesses was used for the study. Figure 1 outlines the constructs of the TOE framework.

Technological context

Technology readiness, according to Oliveira and Martins (2008), refers to the technological infrastructure and the human resources related to information technology adoption. Technological context also represents both internal and external technologies, which are available to the organisation for performing their operations. There are a pool of technologies available to a firm for adoption (Scupola, 2009). These technologies may include the pool of resources such as equipment and processes (Tornatzky & Fleisher, 1990). According to Baker (2012), technological innovations in existence but not implemented in the organisation have an influence on the firm's technological adoption by both providing the limits of the possibilities and indicating ways through which technology can help the firm to be competitive.

The review of literature indicated that the acquisition of knowledge and development of relationships and trust can be triggered through interaction. According to Hitsch, Hortaçsu, and Ariely, (2006), communication cues are conveyed through interactions that are information technology–enabled, which is similar to physical interactions. For instance, Facebook and LinkedIn, which are virtual interactive platforms, allow participants to be effectively matched with participants who share similar or complementary traits or interests. In this regard, in this study, technological trends, used technologies, and convenience, which were tested by Peters, Tijdens, and Wetzels (2004), will also be used in this study. Hence:

Proposition 1. *Technological trends, used technologies, and convenience influence telecommuting adoption.*

Organisational context

In the context of this study, organisational readiness is referred to as "the availability of the needed organisational resources for adoption" (Iacovou, Benbasat, & Dexter, 1995). In addition, the organisational context includes the firm's features, which may include its size, the intrafirm communications processes, interactions between the employees, and the culture within the organisation (Tornatzky & Fleisher, 1990).

Baker (2012) contends that the process of communication within the context of the organisation can also allow for innovation or inhibit it. The behaviours of the leadership or top management and the process of communication are also determinants of the adoption of technology within the firm. The top management of the firm may perform roles such as outlining the firm's strategy and role of innovation in helping to achieve this

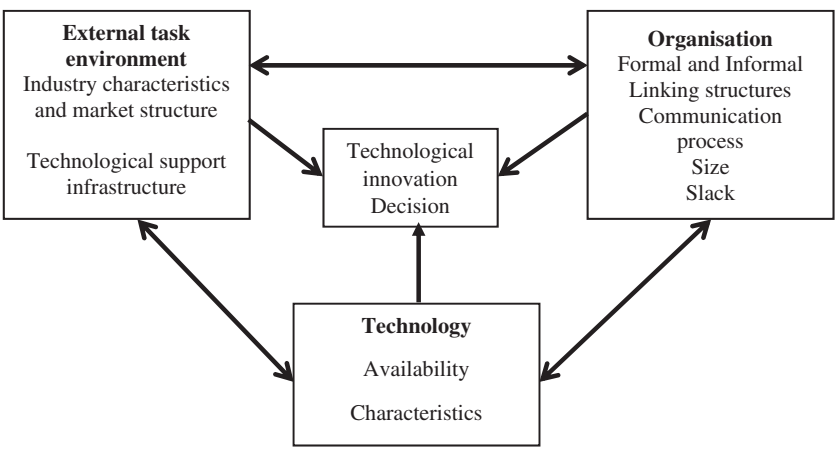

FIGURE 1 The technology–organisation–environment framework (Oliveira & Martins, 2010)

strategy and also providing formal or informal reward schemes for innovative employees. In the context of telecommuting adoption, Green (2014) assert that organisational characteristics and job characteristics influence the adoption of innovation. Hence:

Proposition 2. *Organisational characteristics and job characteristics influence telecommuting adoption.*

Environmental context

The regulatory agencies, absence or presence of providers of technology services, and the structure of the organisation's industry make up the environmental context. The structure of the industry has been researched from varied perspectives (Baker, 2012). These include the competitors of the organisation, the size of the firm, the regulators, and the macroeconomic context (Tornatzky & Fleisher, 1990). Oliveira and Martins (2010) observed the environmental context from the competitive pressure point of view, the degree of pressure from other competing firms within the industry. Similarly, Thong (1999), in an agreement, contended that the level of competition allows for an increase in the level of the adoption of innovation in an industry. Similar to Peters et al. (2004), this study also posits that household characteristics and community issues influence telecommuting adoption.

Proposition 3. *Household characteristics and community issues influence telecommuting adoption.*

3 | METHODOLOGY

The previous section discussed the literature on telecommuting and presented the framework needed to undertake this study. It further presented the conceptual framework of the TOE framework to serve as a guide in the empirical study of the telecommuting adoption factors. This section presents a discussion of the methodology for this study.

This study used the critical realist stance to allow to achieve research purpose, to explore the factors that influence telecommuting among Ghanaian firms, and to assess whether these factors pose as threats and/or opportunities to these firms. The justification for selecting the critical realism paradigm was based on the fact that it allows for a researcher in information systems to "get beneath the surface to understand and explain why things are as they are, to hypothesize the structures and mechanisms that shape observable events" (Mingers, 2004).

The research method adapted, based on the critical realism paradigm, was the qualitative method, as it seeks to explore particular situations and issues through the investigation of the various perspectives and people's behaviour within their original contexts and situations (Kaplan & Maxwell, 2005), thus, best serving the research purpose, which is to investigate the factors that influence telecommuting adoption and also the benefits involved in telecommuting.

Case study strategy was deemed fit to be used to perform this research stemming from Yin's (2009) assertion of case study research; it is a preferred strategy to study in situations where "how" or "why" questions are posed, where there is little or no control for the researcher over the events or where the phenomenon under investigation is contemporary, and it is in real-life context. Hence, the multiple methods for the collection of data become the best option, thus, gathering information from people, observation, documents, audiovisuals, and others. According to Cavaye (1996), case study research focusses on the in-depth understanding of the issue under investigation within its context.

This study is based on the descriptive case study approach, which necessitates a theory to guide the collection of data (Yin, 2009); hence, the TOE framework was reviewed, which formed the basis for the design of the case study. This approach was selected for this research owing to its flexibility and the multiple sources from which data gathering can be done.

The characteristics of the firm were required in the selection of site for this organisational-level research (Benbasat, Goldstein, & Mead, 1987). This, therefore, required that only a firm that practices telecommuting was selected for this study. Further, Ericsson Ghana was selected for the study because of its continuous use of electronic devices to support its operations. This was practically with compliance to the cautions of Benbasat et al. (1987) that the selection of site should be carefully thought out rather than opportunistic and that adequate information to help pursue the objectives of this study should be ensured. For these reasons, Ericsson Ghana fits the study's objective, which is to explore the factors that support telecommuting adoption. The case firm agreed to participate in this research; hence, a reminder email was sent.

3.1 | Data collection methods

The authors used an interview method as the major means for the collection of data. In this venture, both open- and close-ended questions were used. The questions were framed to gratify the objectives for which this study is performed. This process underwent 3 reviews to make sure that the right questions were asked with the assistance of the author's supervisor. Finally, a pilot interview was undertaken with 2 telecommuting employees to evaluate the viability of the questions. The purpose of the interview guide was to direct the interviewer in the course of the interview so as to not deviate from the topic under discussion. The guide contained general questions, which were later profiled along history documents provided by the company. For example, the profile of the respondent, achievements in telecommuting tasks, and how telecommuting are being used to perform tasks.

The authors conducted general interviews with a radio frequency (RF) engineer, a project site administrator, a service delivery officer for Ericsson Ghana who works within the Operations Department, and a member of the sales team. This was done in order to solicit how these people view

telecommuting from their angle of operations in the firm. The questions for the interview (see Appendix A) were organised based on the constructs of the TOE framework to respond to the objectives of the study.

3.2 | Ethics for the interview

The authors, upon gaining entry to the company, obtained introductory letters from the Departments of Operations and Management Information Systems, University of Ghana, to confirm the backing of the departments for the research. With the consent of the respondents of the interview, the authors used a Zoom H4N voice-recording device to record the interviews and wrote notes. The notes served as cues for follow-up questions.

The interviews were held at the convenience of the respondents. The time frame for the interviews lasted 45 minutes to an hour, whereas other discussions lasted between 5 and 10 minutes.

3.3 | Data collection

The data collection for this research was conducted between March 9 and 20, 2016. All data that were collected from the field were organised. Thus, interviews were transcribed, and field notes well-arranged to make logical meaning. Further, the transcribed interviews were read over several times to gain a general perspective of the responses and to reflect on its overall contribution to the research. Boateng (2014) emphasises that the researcher is encouraged to take notes and read through them to sort them out and categorise the data with respect to its relevance to the different respondents and to the research questions to be addressed.

3.4 | Mode of analysis

Miles and Huberman (Miles, Huberman, & Saldana, 2013) define data condensation as "the process of selecting, focussing, simplifying, abstracting, and/or transforming the data that appear in the full corpus of written-up field notes, interview transcripts, documents and other empirical materials." According to Boateng (2014), data condensation is done in 3 stages and starts at the very initial research phase and continues throughout the analysis. Further, the process is characterised by 3 stages. The early stages are where the researcher edited, segmented, and summarised collected data. At this stage, the researcher presented issues and conversations rather than the actual words used in the conversation. These were presented in series of statements to emphasise relevant points. The next stage is the middle stage in coding, which is the condensation of data into meaningful segments and assigning names (labels) to the segments (Boateng, 2014). The final stage is memoing; at this stage, field data that were found to have a linkage with literature either echoing or disproving were presented.

In order to emphasise and to make collected data simple for comprehension, the data were organised into tables, figures, and diagrams. Boateng (2014) emphasises that data display organises and summarises the data to help establish themes and also become the basis for future analysis.

4 | ANALYSIS OF RESEARCH FINDINGS

This section presents the case findings for this research. As pointed out in earlier sections, the purpose of this research is to investigate the technological, environmental, and organisational factors that influence telecommuting adoption by using Ericsson Ghana as a case study and also to examine the potential benefits of adopting telecommuting in the operations of Ericsson Ghana.

4.1 | Company profile

One of the global leaders in the dynamic information communications technology environment is Ericsson, who provides software, hardware, and other services to allow for mobility. It is therefore asserted that Ericsson provides the network infrastructure of about 40% of mobile traffic globally. In addition, Ericsson manages the networks that provide connectivity to more than 1 billion global subscribers every day. Again, Ericsson has over 35 000 patents, which make them one of the leaders with portfolios of strong intellectual property rights (Ericsson, 2016).

In 2007, Ericsson Ghana opened their Ghana branch at Gulf House near Shiashie in Accra to serve the ever-growing mobile telecommunications industry in Ghana and Africa at large. Telecommunications companies such as MTN, Airtel, and Tigo (all operating in Ghana) receive technical support from the Ericsson Ghana company. Beyond the shores of Ghana, Ericsson also supports other telecommunications companies in other African countries. Ericsson Ghana has been successful in their operations in Ghana. For instance, they have won a contract to manage the technical operations of two of the major players in the telecommunications industry, which are Tigo and Airtel telecommunications networks.

4.2 | Telecommuting in Ericsson Ghana Limited

Ericsson Ghana Limited is not new to telecommuting practices. Hartman, Stoner, and Arora (1991) define telecommuting as "an alternative work arrangement that uses technological advances to respond to the increasingly complex demands of a diversifying work force." It is also defined

as a "work arrangement in which employees perform their regular work at a site other than the ordinary workplace, supported by technological connections" (Pinsonneault & Boisvert, 2001).

To put the study in a proper perspective, the respondents were asked to indicate their understanding of telecommuting. This was very necessary to provide an insight into how telecommuting is viewed in Ericsson Ghana. Hence, the Service Delivery Manager for Ericsson who works within the Operations Department asserts that:

> *As I have always understood it; it is being able to perform your role remotely not necessarily within your organization.*

In addition, the RF Engineer also understands telecommuting to be

> *For I will define telecommuting as ways of working not necessarily having to put you in a fixed office but they can carry the office with you wherever you go.*

Another respondent also sees telecommuting to be

> *From my own understanding telecommuting is an avenue, a way or a medium whereby you can work from anywhere and not necessarily be physically in the office, work from home, work remotely or anywhere you find yourself you can just login into intranet virtually and you operate from there which is something we do in Ericsson.*

Again, telecommuting has received a company-wide acceptance by the staff of Ericsson. All the respondents indicated that they telecommute some of their tasks. This was confirmed by the Service Delivery Manager for Ericsson who works within the Operations Department who asserted that:

> *Everybody! Every single person telecommutes. Most of the meetings are done through telecommuting in what we called tele bridge.*

The respondents were therefore asked to outline some of the tasks that they telecommute. The RF Engineer indicated that:

> *For the task that I do telecommunicate, in the case of new site coming and maybe in the case of customer explaining for instance where i am so long as I have my mobile station or mobile affect with me, I can login without necessarily rushing back to the physical office, in my home at the bus stop anywhere at all I can just login in to check on any urgent request that comes my way or is requested of me.*

4.3 | Telecommuting adoption factors

The widespread adoption of telecommuting in Ericsson Ghana is influenced by some factors. These factors are delineated in this section in terms of technology, environment, and organisation.

4.3.1 | Technological factors

These are adoption factors related to the use of technology, such that the existing technology supports telecommuting activities. These technological factors have made it possible for the staff of Ericsson Ghana to conveniently telecommute. The Service Delivery Manager for Ericsson, for instance, attributes the acceptance of the telecommuting phenomenon to the availability of supporting devices and technology, which include internet and MiFi devices. He elaborated on this by saying:

> *It has become more accessible if you go back to a decade or a decade and half ago, having internet at home was a thing that people didn't have. Now internet has become vastly cheap and more accessible and so it's now easy to access information from a remote location so you do not need to be in the office to plug in your LAN cable to access the internet. With the introduction of wireless, MiFi devices, Dongles or even the mobile phone, tethering of your mobile phone allows you to access the internet. Once you can access the internet you have access to all the information you need to be able to perform your functions. Also, the advancement of mobile phone, Skyping, face-to-face calling and video call. You are able to cluster people in groups and disseminate information faster on Apps like telegram, WhatsApp etc. So, these kinds of technologies have helped.*

Another respondent confirmed this assertion by attributing the adoption of telecommuting to the availability of devices such as smartphones and tablets, which allow for easy communication and transactions. The respondent asserted that:

> *My phone maybe. And also with the emergence of new technology let say high speed, for instance 4G, if I can do or transfer or process data at a higher speed in a short time, it means that I am able to deliver the same task because of the speed offered to me by my network in a faster time so I am able to have ample time to do other things. Also, if these are offering me the opportunity to telecommute whenever I am not able to go to my office, then I am saying that for some of the jobs that I would have done in the office, even being in traffic or at one place, I am able to convert the time into profitable working hours just by telecommuting. New technological trends have therefore aided my adoption of telecommuting.*

4.3.2 | Organisational factors

In addition, the organisational context includes the firm's features, which may include its size, the intrafirm communications processes, interactions between the employees, and the culture within the organisation (Tornatzky & Fleisher, 1990). In the context of the study, the organisational factors include Ericsson Ghana Limited's internal structures and human resources, which provide the conducive atmosphere for telecommuting adoption.

The respondents of the study who are the staff of Ericsson (Human Resources) indicated their experience with the use of electronic devices, which is a requirement for telecommuting. Their high level of expertise in information technology and systems was confirmed by the respondents. The Service Delivery officer, for instance, indicated that:

> *I have two degrees in IT, two master's degree; one in IT and another in MIS. So, I would say high.*

Again, the nature of the tasks of the staff of Ericsson Ghana also supports the adoption of telecommuting practices. It is therefore asserted that Ericsson provides the network infrastructure of about 40% of mobile traffic globally. In addition, Ericsson manages the networks that provide connectivity to more than 1 billion global subscribers every day (Ericsson, 2016). Ericsson's staff depend solely on electronic devices to perform their activities. A respondent indicated:

> *It cannot be done without it. Nothing can be done without electronic devices.*

Hence, there is no doubt about the presence of an institutional support for the adoption of telecommuting practices. A respondent indicated the support of management of Ericsson by saying:

> *Speaking as Service Delivery Manager (SDM), I am left to manage my own work load. Every month I have governance meeting, I have key deliverables and once these are done adequately nobody is really managing you. They trust that you are a professional and you can do your tasks. There is minimal supervision.*

Even when respondents were posed with the issue of security threats and other organisational impacts of telecommuting their tasks, they proclaimed the approval of the management of Ericsson Ghana for them to telecommute their task. This was because of the supportive network infrastructure introduced by the management of Ericsson Ghana Limited.

> *Ericsson has the infrastructure in place, encryption in place in order for me to dial in into VPN to work, I need to dial into a VPN which is very secure, so in terms of that it is very difficult if I do not give my password to someone to hack me it is very difficult.*

4.3.3 | Environmental factors

The regulatory agencies, absence or presence of providers of technology services, and the structure of the organisation's industry make up the environmental context (Baker, 2012). The homes of the staff of Ericsson Ghana Limited were also taken into consideration in the analysis of the environmental factors that either support or hinder the adoption of telecommuting. For the homes of the respondents, it was discovered that their families supported the practice of telecommuting in the homes. The respondents indicated that they had supportive families who allowed them to work from their homes. Evidence is shown by one respondent who indicated that:

> *There are five of us; myself, my wife and three kids. I have a four-bedroom house. It has a study which allows the adults to have quite time. I work in the study, so privacy is not an issue.*

Another respondent also asserted that:

> *We are six; four children plus my mum and dad. We have four bedrooms. I really do not do anything at home; my mum cooks and my sister does the other chores so I am always free to telecommute.*

The service providers, which include the telecommunications networks, have also introduced a network connection that allows uninterrupted communication and transaction. This has given the perfect environment for telecommuting to be adopted. For example, a respondent attributed his or her adoption to telecommuting to the availability of good network connectivity in his or her locality, which has allowed for 4G connectivity.

> *I use a 4G service provider, I receive the signals in my locality, and it never drops out. It is not provocative; I think it is also affordable.*

In buttressing the point on good network connectivity, which supports telecommuting, another respondent also indicated that:

> *In the area that I do stay, network connectivity is not an issue at any time that I need to telecommute. In terms of accessibility, most of the operators I have their presence in my area so internet is not an issue. There is accessibility and stability.*

4.4 | Benefits of telecommuting

In another breadth, the study also wanted to determine some benefits derived from the adoption of telecommuting. These benefits were 2-fold: benefits to Ericsson and benefits to the employees. These are elaborated below.

4.4.1 | Benefits of telecommuting to Ericsson Ghana Limited

Ericsson Ghana Limited derives a lot of benefits from the implementation of telecommuting practices. These benefits include increased productivity and customer satisfaction.

For increased productivity, the respondents indicated the ability to complete various tasks assigned to them, hence making the management of Ericsson very appreciative of their ability to complete their tasks.

> *Well, in my own estimation, the organization has made it possible for everyone to like telecommuting. This is because, we are able to deliver efficient services at all times. And we are always available to perform our tasks.*

4.4.2 | Benefits of telecommuting to employees

The employees of Ericsson Ghana Limited, who are the focus of this study, were very delighted to be able to telecommute their various tasks. They are therefore able to complete their tasks even in the comfort of their homes. These employees expressed their delight in being able to work from any place, even in traffic and at homes.

> *They are flexible; officially my working hours are 8am to 5pm and five days in a week, but they are flexible. I do not have to be in the office all the time to work. I am not required to work on weekends but because it is flexible there are instances that I work during the weekends.*

5 | DISCUSSION OF FINDINGS

The previous section analysed the research findings of this study in relation to the research objectives. The analysis was performed to recognise the emergent issues and concepts of the findings of the research. This section discusses the analysis of the findings in relation to the reviewed literature in order to address the research objectives. This section brings together the literature findings and the empirical findings and analysis from the context of the study and the previous section.

5.1 | Benefits of telecommuting

This study seeks to examine the potential benefits of adopting telecommuting in the operations of Ericsson Ghana. Hence, the following subsections discuss the benefits of telecommuting to both Ericsson Ghana Limited and the employees.

5.1.1 | Benefits of telecommuting to Ericsson Ghana Limited

Telecommuting provides a number of benefits for organisations including Ericsson Ghana Limited. Research findings from extant studies have indicated the numerous benefits of telecommuting for organisations (Bose & Luo, 2011; Khoury, 2009). These benefits include increased productivity, increased revenues of the organisation, reduced absenteeism, reduced turnover, reduced costs associated with the physical space at the office, reduced traffic congestion, fuel conservation, and air pollution reduction. The benefits are substantial because they allow the organisation to operate more efficiently.

The analysis of the data therefore revealed that the employees of Ericsson receive high support from the management. This was ascribed to the numerous benefits that the company derives from the implementation of telecommuting practices. Ericsson Ghana has installed an effective network infrastructure that allows employees to effectively perform their tasks at any place and any time, as Crandall and Gao (2005) has asserted that organisations use the internet or lease lines that are for private communication to allow their employees to telecommute, which helps the organisation to make tremendous gains in terms of higher productivity and returns.

5.1.2 | Benefits of telecommuting to the employees of Ericsson Ghana Limited

The individuals in the organisation are the ones who telecommute and hence receive the direct impact from telecommuting practices. Studies have shown that these impacts can be positive and negative (Elsbach & Bechky, 2007).

Even though a respondent in this study indicated that working from his or her home sometimes becomes stressful, it must be emphasised that the majority of the respondents interviewed have claimed to achieve higher job satisfaction from adopting telecommuting practices. One major positive impact of telecommuting that this study discovered and was also affirmed by Hunton (2005) is that various employees are able to save on the cost and time of commuting to and from the place of work. In line with previous findings, the improved job satisfaction through the adoption of telecommuting helps the employees to become more motivated.

The study also discovered that telecommuting provided less pressure on employees, flexible hours for work, better social life, an improvement in the ability to clearly think and analyse issues because of the reduction in interruptions, and an improvement in time management (Bose & Luo, 2011; Crandall & Gao, 2005; Khoury, 2009).

5.2 | Telecommuting adoption factors

The second research objective was to identify the key factors that determine the adoption of telecommuting in Ericsson Ghana Limited. Hence, the following subsections discuss the adoption factors of telecommuting using the TOE framework. Apart from the TOE framework being a theory for analysing phenomena at the organisation level, which proposes 3 major elements to influence organisations' adoption of a technological innovation, it also has a theoretical basis, which has been strongly supported by extant literature in information systems research (Oliveira & Martins, 2010), and hence is the best fit to understand telecommuting adoption in Ericsson Ghana Limited. The research model is shown in Figure 2.

5.2.1 | Technological factors

From the analysis of the findings, it is asserted that technological trends and support influence the implementation of telecommuting. This finding can be lined along the conclusions of Peters et al. (2004) on a similar study on telecommuting adoption, where they asserted that the availability of electronic devices supported telecommuting practices. Existing literature on telecommuting also postulates that the social richness of technologies for communication has an impact on the telecommuters' job satisfaction and productivity (Bosua, Gloat, Kurnia, Mendoza, & Yong, 2013; Turetken, Jain, Quesenberry, & Ngwenyama, 2011). Thus, telecommuting adoption will tend to be high when high-quality technological devices and other equipment are provided as depicted in the analysis of the findings in this study. Invariably, the technological trend and the availability of technologies in which the staff of Ericsson Ghana find convenient to work with influence telecommuting adoption as supported by Ye's (2012) study.

Finding 1. *Technological trends, used technologies, and convenience influence telecommuting adoption.*

5.2.2 | Organisational factors

This section discusses the organisational angle of the research framework. It also seeks to answer the organisational factors that enable telecommuting adoption in Ericsson Ghana Limited.

The study in the literature review section proposed that the organisational and job characteristics influence the adoption of telecommuting. The analysis of the findings indicated that the operations of Ericsson Ghana Limited centred on the use of electronic devices (Ericsson, 2016) with the management offering full support for the implementation of telecommuting practices. A review of extant literature on telecommuting adoption also indicated that telecommuting is seen to be a human resource and an organisational innovation (Lee, Chu, & Tseng, 2009); hence, researchers assert that its adoption includes issues such as adjustments in organisational governance such as the governance structure, mechanisms for coordination and control of relationships, and the system for rewarding employees (Daniels, Lamond, & Stranden, 2000; Martínez-Sánchez, Vela-Jiménez, Pérez-Pérez, & de-Luis-Carnicer, 2011). Hence, the role of management is indispensable in the adoption of telecommuting.

This study therefore asserts that the organisational characteristics and the job characteristics in Ericsson Ghana Limited influence telecommuting adoption, which is in line with extant telecommuting studies (Bayrak, 2012; Ye, 2012).

Finding 2. *Organisational characteristics and job characteristics influence telecommuting adoption.*

5.2.3 | Environmental factors

The regulatory agencies, absence or presence of providers of technology services, and the structure of the organisation's industry make up the environmental context (Baker, 2012). The third proposition for the study was the influence of household characteristics and community issues on telecommuting adoption. Peters et al. (2004) assert that a research finding from the United States showed that 3 of 4 teleworkers were male, and as such, males find it more comfortable telecommuting in their homes than do their female counterparts. This assertion seems to be true for the case of Ericsson Ghana where the respondents were all male and hence were able to conveniently telecommute in their various homes.

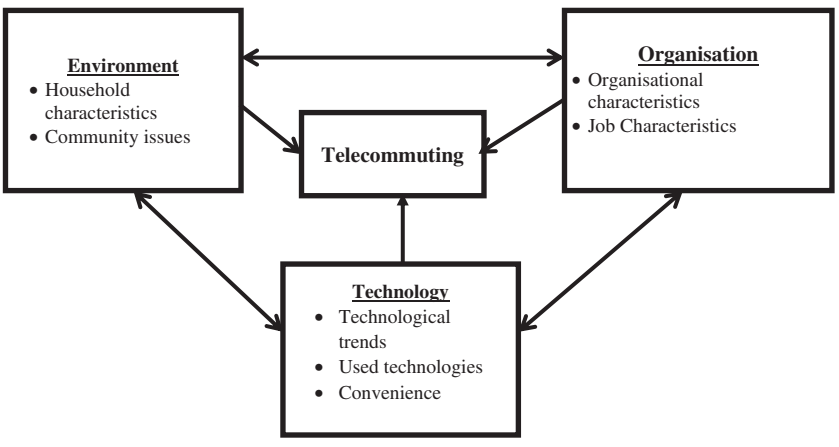

FIGURE 2 Telecommuting adoption model

Improved communication through tools for online collaboration, web-based presentation rooms, tools for workflow management, and video conference enhances telecommuting practices (Bayrak, 2012). This assertion is also in support of the finding of this study, which indicated good network infrastructure specifically from the telecommunications networks, allows for effective telecommuting practices. These are some of the community issues that have an impact on telecommuting adoption practices.

Finding 3. *Household characteristics and community issues influence telecommuting adoption.*

6 | CONCLUSION AND RECOMMENDATIONS

This final section presents a summary of the key issues that have been addressed in this study. It is a narrative of the entire research process and includes all the ideas that have been constructed over the course of this study such as the contributions to research, practice, and policy.

6.1 | Summary of the research findings

The findings of the study are in 2 strands: the findings on the potential benefits of adopting telecommuting in the operations of Ericsson Ghana and also findings on the factors that influence the adoption of telecommuting in Ericsson Ghana.

The staff and the company as a whole benefit from the adoption of telecommuting practices. These benefits include increased productivity, increased revenues of the organisation, reduced absenteeism, reduced turnover, reduced costs associated with the physical space at the office, reduced traffic congestion, fuel conservation, and air pollution reduction. The benefits are substantial because they allow the organisation to operate more efficiently. On the other hand, the study also discovered that the employees of Ericsson Ghana achieved higher job satisfaction from adopting telecommuting practices. One major positive impact of telecommuting, which this study discovered and also affirmed by Hunton (2005), was the employees' ability to save on the cost and time for commuting to and from work daily. The study also discovered that telecommuting provided less pressure on employees, flexible hours for work, better social life, an improvement in the ability to clearly think and analyse issues because of the reduction in interruptions, and an improvement in time management (Bose & Luo, 2011; Crandall & Gao, 2005; Khoury, 2009).

The second research objective was to identify the telecommuting adoption factors. Using the TOE framework, the study identified technological trends, used technologies, and convenience as the technological factors influence telecommuting adoption, which were supported by telecommuting literature (Bosua et al., 2013; Turetken et al., 2011). Also, the study identified organisational characteristics and job characteristics to be the organisational factors that influence telecommuting adoption, which are in line with findings of extant studies on telecommuting (Bayrak, 2012; Lee et al., 2009; Ye, 2012). Finally, the study found household characteristics and community issues to be the environmental factors that influence telecommuting adoption. This finding was also affirmed by studies on telecommuting adoption (Bayrak, 2012).

6.2 | Implications of the study

In research significance, the study contributes towards future research by identifying factors that influence telecommuting adoption. The study has therefore added to the body of knowledge by probing into strategies and guidelines for implementing telecommuting in Ghana and to a larger extent West Africa. Arguably, few studies have been conducted on telecommuting from a developing economy's perspective using the TOE framework.

Concerning the significance to practice, the study provides guidelines to organisations to unearth the hidden benefits of telework and key issues on risks and ways to mitigate these risks. Insights into the benefits of telecommuting to both the employees and the organisation as a whole have been uncovered by this study. Hence, using Ericsson as a case for the study, this serves as a guideline for other organisations who intend to adopt telecommuting in their operations.

Concerning the significance to policy, this study provides the guideline for policy discourse in relation to telecommuting. Among them are cost of data by the service providers and the policy framework by government in ensuring that the country has the requisite infrastructure now or in the near future to support the implementation of telework.

6.3 | Limitations and future research direction

This study, arguably, being the first on telecommuting in Ghana, will invariably be prone to shortfalls and limitations. First, the study covered only a handful of employees of Ericsson Ghana Limited. This, therefore, makes the sample size very small. Again, the study's attention was only on the factors that supported the adoption of telecommuting without looking at the hindrances to its adoption.

On the back of the above-mentioned limitations, future researches should concentrate on the following areas: a qualitative study to identify factors that support and also factors that hinder the adoption of telecommuting in Ghana; multiple case studies on telecommuting adoption in Ghana; and gender issues surrounding telecommuting adoption in Ghana.

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APPENDIX A: INTERVIEW GUIDE

Overview of Research: Telecommuting has been defined as working away from the office, one or more days per week, using a computer via telecommunications facilities (Manochehri & Pinkerton, 2003). The research seeks to:

1. investigate the technological, environmental, and organizational factors that influence telecommuting adoption;
2. examine the potential benefits of adopting telecommuting in the operations of Ericsson Ghana.

You are, however, not under any obligation to answer questions to which you feel uncomfortable with.

Thank you for your valuable contribution in advance. Your participation is vital to the success of this research. Information to be gathered from your firm is purely intended for academic purposes.

Background of Respondent

1. Kindly enlighten me on your position and unit within your organization.
2. Kindly enlighten me on your job details. Are you in a technical section or administration?
3. How long have you been working with this organization?
4. In your estimation, what is telecommuting?
5. Do you telecommute any of your tasks?
6. Kindly elaborate some of the tasks you telecommute.

Technological trends

Technological trends are constantly on the rise …

7. What do you think are some of the opportunities presented by modern technological trends to your adoption of telecommuting?
8. What about the role of technological trends serving as threats to your adoption of telecommuting?

Used technologies find support for each of them as defined

9. Can you please enlighten me on some of the technologies you employ in telecommuting?
10. Which official equipment/devices help you to telecommute?
11. How do you keep yourself abreast with these technologies?

User convenience

12. How do you forecast the convenience (platforms, security, usability, and size of devices) in telecommuting?

Organisational context

Organisational characteristic

13. How many people do you think are involved in telecommuting in your organization?
14. How many people in your department have tasks that involve the use of electronic devices?
15. How do you consider the work environment in the organization?
16. What is the nature of supervision of tasks in the organization?
17. Is there any policy governing telework in your organization? What are the key things in this policy?

Benefits to the organization

7. In your view, what do you think are some of the benefits accrued to your organization as a result of telework?
8. Has telework made you more productive, please can you explain?

Challenges to the organization

9. Are there any benefits you have to forfeit because you telecommute? (Like overtime?)
10. Do you think telework has impacted your social integration to the organization?

Job characteristics

11. What is your level of IT skills? (low/high/moderate) explain with certifications
12. How is your working hour like?
13. How often do you require the use of an electronic device in your work? Explain with examples.

Environmental context

Household characteristics

14. What is your family size? Include number.
15. What is the nature of your household? Do you have a room dedicated to telecommuting?
16. Do you do some chores in the house?
17. What are some of the chores you have to sacrifice to be able to telecommute?

Community issues

18. What is the nature of network connectivity in your community? Cost and accessibility
19. Do your neighbours (co-tenant) hold any view towards you when you tell them you are working from home?

Benefits in adoption

20. In your estimation, how long do you travel to and from work?
21. In your view, what do you think are some of the benefits accrued to you when you telework?

Challenges in adoption

22. What are some of the challenges you encounter in telecommuting your tasks?
23. How do you overcome these challenges?

Closure:

24. I am done with my questions; do you have any questions to ask me or anything you might have wanted to say that I did not ask?
25. Can you please lead me to another informant if there is any that you know of who can provide me with further information?
26. Are there any available documents (manuals, brochures, flyers) that can provide me with further information?

Thanks for your time and participation.