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E-leadership and adaptation to technological development of telecommunication businesses in Ghana

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Abstract
Purpose: The study examined the role of e-leadership in adapting to technological development.
Research methodology: A mixed methods triangulation approach was used for the study. Quantitative data was collected from 297 customers and 146 employees of telecommunication companies in Ghana using a questionnaire. For qualitative data, 12 respondents were interviewed. Quantitative data were analyzed with descriptive statistics for IBM SPSS Statistics 24. Qualitative data were analyzed using content analysis.
Results: It was found that e-leadership discourages face-to-face interactions. Leaders tend to employ the use of social media when communicating with team members during rapid technological development. Virtual teams are employed while completing projects. Managers show empathy, provide effective supervision and are always available online to assist virtual team members who happen to encounter challenges, in a timely manner.
Limitations: This study was limited to employees and customers of telecommunication companies in Ghana.
Contribution: This research has exposed that E-leadership positively affects the productivity of virtual team members, who tend to face challenges during technological advancement. This implies that with e-leadership, the level of difficulty faced while adapting to rapid technological development is significantly reduced.
Novelty: There is a need for managers to be consistent with the application of the e-leadership concept no matter how sophisticated technology gets. It is therefore recommended that managers continue with the use of e-leadership while providing guidance for challenged virtual team members.
Keywords: *E-leadership, technology, technological development, telecommunication, management*
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1. Introduction

Over the past two decades, the rate at which technology has improved is very phenomenal, considering several frequent upgrades in information and communication technology (ICT) tools like computer hardware and software applications; social networking sites and programs; data processing and storage gadgets; and mobile phones (Viguerie, Cowan, & Hindo, 2017). For both corporate organizations and individual users, acquiring the current or an upgraded version of a particular technology is very critical to an employee's ability to attain some level of satisfaction. The regular upgrades and rapid developments, however, come with some financial as well as other implications

(Anita Bans-Akutey, 2019). For an organization that invests substantially in ICT tools and regular upgrades, the implications of such investments tend to affect the attainment of organizational objectives either positively or negatively (A Bans-Akutey, 2021; Lekwauwa & Bans-Akutey, 2022; Nuryanti, Hanifah, & Cahyadi, 2023). Similarly, telecommunication companies that provide the infrastructure for technological development are also faced with the issue of having to adapt to rapid technological development (Dokku, Rajesh, & Lakshmi, 2022).

The Ghanaian telecommunication industry is made up of organizations that provide services related to television, radio, fixed telephone, mobile phones and the internet. Ghana is one of the pioneering African countries that moved from a central-government-controlled telecommunication industry to a liberal competitive one, where participation of the private sector was properly organized (Osei-Owusu, 2015). In Ghana, the National Communications Authority (NCA) is in charge of the allocation, assignment and regulation of the usage of frequencies in such a way that they conform to the strategic goals of the telecommunications sector. They further ensure that fair competition exists among the telecommunication operators in the country. The NCA also sees to it that customers are provided with excellent service by regularly embarking on network checks throughout the nation (NCA, 2021). The Ghanaian telecommunication industry has evolved over the past few years with intense competition across fixed-line, mobile and internet services (Ghana, 2017).

According to Anita Bans-Akutey (2020), for every organization the aims at attaining excellence, there is the need for management to effectively communicate the objectives of the firm to employees; link organizational excellence to daily operations, tasks and procedures; evaluate and measure excellence; empower employees with formal authority; get technology firmly established; as well as support continuous learning of employees (Ghorbani & Khanachah, 2020). These can be attained through effective leadership. It has been established that effective leadership is necessary for the success or otherwise of every organization (Tiimub, Bans-Akutey, Tiimob, & Agyenta, 2020).

In recent times, the pervasiveness of ICT has altered the way managers interact with their subordinates resulting in the discovery of the e-leadership concept (Vought, 2017). E-leadership is a term that describes the concept of providing leadership in a virtual environment where most of the interactions between management and other employees are aided by ICT. According to Barnwell, Nedrick, Rudolph, Sesay, and Wellen (2014), e-leadership is made up of two main components namely communication and technology. However, the infrastructure for these two components is facilitated by telecommunication companies. Telecommunication companies, like any other organization, are also faced with the fact that technological advancements are happening rapidly and also affecting how managers in that industry interact with their subordinates. Several studies have examined the effect of leadership on an organization (Darling & Nurmi, 1995; Kirkpatick & Locke, 1991; Mousavi, 2009; Saha, Gregar, & Saha, 2017; Tiimub et al., 2020; Wing, 1988). However, very few studies have been carried out in relation to the role of e-leadership in adapting to technological development. This study, therefore, examines the role of e-leadership in adapting to rapid technological development.

2. Literature Review

In Ghana, the evolution of technology over the last few years may be attributed to the rapid increase in the use of cellular phones and the natural understanding that apart from the usual calls and text messages, users can perform other sensitive functions and get official tasks completed on time (Avle, 2020; ITA, 2020). It has become common to see organizations adopting the use of virtual procedures. Owing to the availability of the internet, businesses now engage in e-business, e-commerce, e-learning and e-management. The use of ICT in organizations has completely changed most management practices worldwide and Ghana is no exception (Anita Bans-Akutey, 2019).

Management's ability to properly share information with the use of ICT results in employee empowerment and organizational stability. This in turn enhances top management's ability to integrate these ICT developments into the organizational mission and strategic goals (Chinomona, 2013; Chow, 2020; Eke & Kenebara, 2020; Olusola, Usman, Aina-David, & Yinus, 2013).

Nonetheless, while introducing the use of new technology, during an upgrade of an existing one, or any technological development of a sort, management tends to face some issues that require redress. Management's ability to properly integrate the new technology into the existing organizational mission will determine if they will be able to maintain their market share and remain competitive while satisfying customers or lose out in the marketplace. This requires that top management and employees get well-trained and groomed to effectively use the upgraded technology (Ahsan & Malik, 2015; Kamal, Bigdeli, Themistocleous, & Morabito, 2015; Srivastava, Masci, Gomez, & Schmidhuber, 2014; Yin, 1992).

leadership is more than just an extension of the traditional leadership that most managers are used to (Avolio & Kahai, 2003). It is a complete change in how managers and their subordinates relate in an organization. Vought (2017) defines e-leadership as the process where an individual's entire leadership task is completed through electronic channels. This implies that the main difference between traditional leadership and e-leadership is the channel or medium. In recent times, it is not uncommon for managers to perform all tasks assigned to them from afar with the use of ICT tools. Most project managers are able to remotely supervise projects from start to end. In the same way that traditional leadership sets out to motivate employees, e-leaders with the use of technology are able to motivate employees in ways that bring out the best in them without physical contact (Van Wart, Roman, Wang, & Liu, 2017). Liu et al. (2018) argue that e-leadership is able to produce the same results as traditional leadership and sometimes exceed it. In most cases, team members tend to have access to the same information as their leaders. Team members are able to freely share their thoughts and challenges with management on the virtual platforms that have been made available while managers on the other hand provide the needed support (Allen & Seaman, 2015).

Avolio, Sosik, Kahai, and Baker (2014) demonstrated that e-leadership is a social influence that is mediated by advanced information technology which results in a transformed attitude, feeling, behavior or thinking, that is effective in both close and distant contexts. This implies that e-leadership produces high levels of efficiency, effectiveness, productivity, low employee turnover, high employee retention and improved staff morale. Technology's influence on leadership is such that it results in a change with respect to access to information and media; better interconnections among individuals; improved employee relations; and authentic communication among team members (Avolio & Kahai, 2003). Kahai, Sosik, and Avolio (1997) found that "Not only can leadership promote successful adaptations to change, it is possible for leadership to cause new information technology to be appropriated in such a way that it has little or no effect on the pre-existing social-cultural system within an organization".

2.1 E-leadership for virtual teams

Rapid technological development has not only transformed leadership styles but has also had an effect on how employees and teams complete their tasks (Hertel, Geister, & Konradt, 2005; Nydegger & Nydegger, 2010; Torre & Sarti, 2020). Prior to the Covid-19 pandemic, most employees and teams completed their tasks offline and in person (Ebuka, Nzewi, Gerald, & Ezinne, 2020; Naab & Bans-Akutey, 2021). This however changed following the effect of restriction on movement that was imposed by the government as a result of the pandemic. In recent times, there has been an increase in the rate at which employees work online, making use of modern technologies and the internet. The concept of virtual teams has also become very popular. Thus, no matter how physically distant team members are, with the use of technology and the internet, the effect of physical distance is eliminated in a way that projects are successfully completed with very little or no physical contact (Avolio et al., 2014).

According to Zigurs (2003), a virtual team refers to a group of people who are dispersed by location but are able to collaboratively work together to accomplish a common goal through the use of communication and technological tools. Such teams are not physically limited at any time during the completion of the task assigned to them (Duarte & Snyder, 2006). With the use of technologies that facilitate team collaboration, they are able to reduce operational costs, increase communication speed and reduce the time used in active decision-making (Jones & Karsten, 2008). As explained by Lilian

(2014), for a virtual team to exist, there should be relevant technologies that allow team members to work together. Additionally, team members should be dispersed geographically. In other words, the location of team members, while working on projects, should be different.

Considering the fact that traditional teams require effective management to ensure that tasks are completed on time and according to schedule (Anita Bans-Akutey, Ohene Afriyie, & Tiimub, 2022); virtual teams also require that some kind of supervision is provided virtually. The leadership component for the success or failure of every team cannot be compromised (Anita Bans-Akutey, 2020). Whether traditional leadership or e-leadership, there is a need for the provision of some kind of guidance for members of the team. Communication plays a major role in ensuring that virtual team members are adequately guided while completing their tasks online. According to Fan, Chen, Wang, and Chen (2014), during change management, communication plays a very significant role. In the online space, members of virtual teams can sometimes get overwhelmed by the rate of development, unclear instructions, tight schedules and commitment level of other team members. Research indicates that the virtual space is mostly characterized by uncertainty and rising challenges of general incomprehension among individuals (Kayworth & Leidner, 2000; Purvanova & Bono, 2009).

The type of communication between leaders and team members in the virtual space is another subject of interest. In the traditional business setting, interpersonal relations between management and team members go beyond job-related discussions. Sometimes there is a general discussion that only serves as an avenue for management to bond in a better way with the team members. Hart and McLeod (2003) analyzed the different types of communication in the virtual space as to whether it is related to the task that has been assigned or directed towards improving the interpersonal relationship. According to Anita Bans-Akutey (2022), in recent times managers have adopted the use of social media for official communication. Consequently, this means no matter the medium of communication, virtual teams and leaders in the online space can interact successfully whether it relates to the assigned task or it is meant to improve interpersonal relations.

3. Research Methodology

A mixed-method research approach was employed for this study. The mixed methods research design serves five purposes, namely; triangulation, complementarity, development, commencement and expansion (Teddlie & Tashakkori, 2011). Triangulation was the focus of this study. According to A. Bans-Akutey and B. M. Tiimub (2021), a researcher may use a variety of data sources for triangulation; in a way, that evidence from multiple sources correlates to reveal or clarify a particular perspective. The mixed methods approach was used in order to be able to examine data from more than one source. A survey design was used where detailed information was collected from study participants (Creswell, 2011). The population for this study consisted of all telecommunication employees and customers in Ghana. These were made up of the three major telecommunication companies in Ghana. However, in the field of research, due to limited resources, it was impossible to study each member of the research population (Cochran, 1977). A sample drawn from the population was then used. According to A. Bans-Akutey and B. M. Tiimub (2021), a study's sample is very essential when it is not possible to study all the eligible subjects in the population. Sampling must however be done correctly and effectively in a way that the results of the study can be generalized. A simple random sampling technique was used to collect that data for the quantitative part of the study. A purposive sampling technique was used to sample 12 respondents for the interview.

According to Meyer (1979) and Fox, Morris, and Rumsey (2007), for population sizes that are 500,000 and above, a sample size of 384 is enough to produce results that can be generalized. For this study, a total of 443 participants took part in the quantitative survey. These 443 participants were randomly selected to participate in an online survey. An online questionnaire was designed in line with the study's objective. The link to the questionnaire was then shared on major social media platforms where participants willingly participated in the study for the collection of quantitative data. The researcher aimed for 384 responses. However, by the end of the data collection period, 443 valid responses were completed. Regarding the collection of qualitative data, online interviews were

conducted for the study participants on the Zoom conferencing app. Participants for the qualitative data collected were purposively selected. Quantitative data was analyzed with the use of descriptive statistics from Microsoft Excel and IBM SPSS Statistics 24 and a summary was provided in percentages and a figure while the qualitative data collected was analyzed with the use of content analysis.

3.1 Ethical considerations

The study as part of the requirements got approval from the Unicaf Research Ethics Committee (UREC) before the start of data collection. UREC is the division of Unicaf University in Zambia, that gives approval for students to carry out research works. The UREC Policy on Research Ethics guided the conduct of this study. For this study, even though participants were encouraged to participate, none of them was forced to participate in the study against their will. All participants were informed of the freedom to opt out of the research work at any time if they felt uncomfortable answering any of the questions. For participants who started and could not complete the survey, the online questionnaire was designed in such a way that uncompleted responses were not part of the analyzed data. The identity of all the participants and the telecommunication company they work in or are affiliated with were made anonymous in a way that it is not possible to connect the data to anyone or any organization.

4. Results and Discussions

Of the 443 participants for this study, there were 146 employees and 297 customers of telecommunication companies in Ghana. Data was collected over a period of approximately 2 months. Considering the fact that it was an online survey, enough time had to be allowed so as to get the participants to willingly complete the questionnaire. Of the 146 employees who partook in the study, there were 88 females and 58 males representing 60.27% and 29.73% respectively. From the part of customers, there were 164 females and 102 males, representing 55.22% and 34.34% respectively. About 31 participants representing 10.44% preferred not to disclose their gender. In all, customers and employees together, participants in the study were made up of 56.88% females, 36.12% males and 7% who prefer not to say.

With the use of six items, the online questionnaire measured the role of e-leadership in adapting to technological development. The results are shown in Figure 1. It was proven that e-leadership has discouraged face-to-face interactions; telecommunication companies have adopted the use of social media for formal communication; virtual teams are used when adapting to technological development; telecommunication companies are able to advance in the online workspace; management's readiness to offer support for team members has improved; and virtual teams have an improved communication channel established through virtual leadership while adapting to technological advancement. This has been computed in percentages and illustrated in Figure 1. For all the items, it was observed that the level of agreement for the examined items remained very high with just some minor variations in each item of the construct.

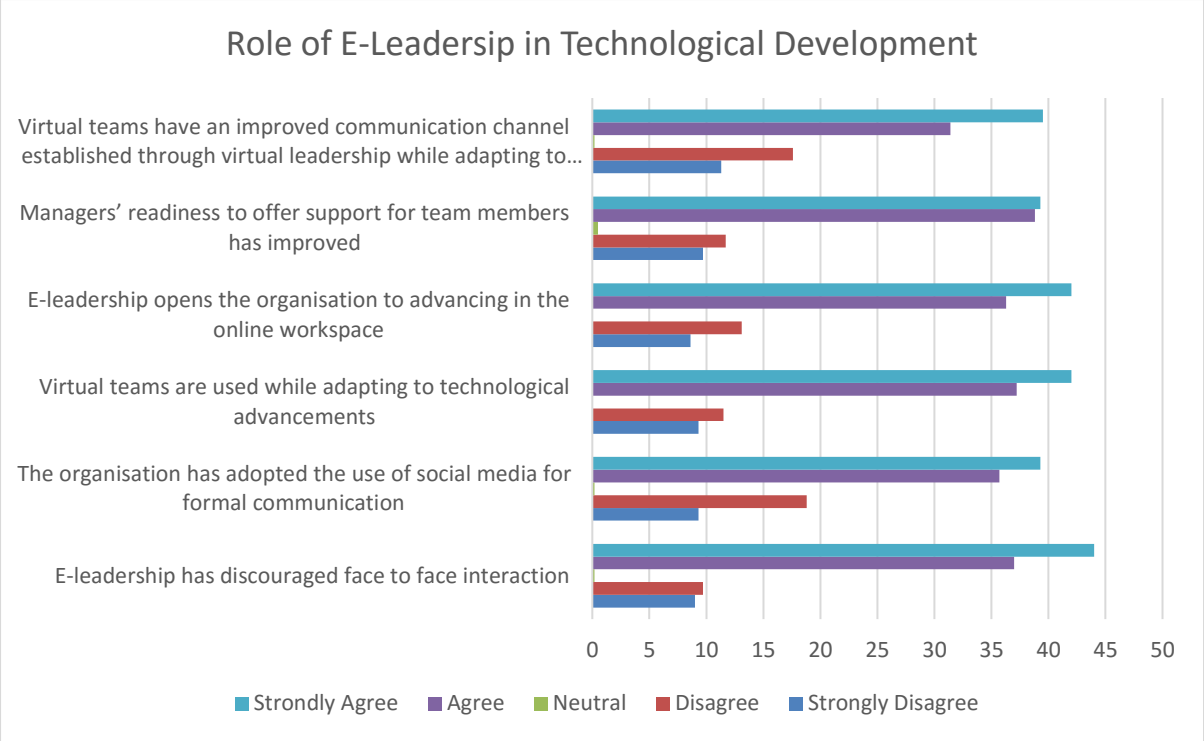

Figure 1. Role of e-leadership in adapting to technological development

Qualitative results showed that e-leadership, during technological development, facilitates effective change management, proper supervision of team members and makes room for management's show of empathy towards team members who encounter challenges in the virtual space.

4.1 Effective change management

Findings showed that e-leadership facilitates effective management. Respondents indicated that it would be out of place to have a manager who makes use of only the traditional form of leadership, to successfully manage a virtual team. That would be the typical case of "a square peg in a round hole" as stated by a participant. Leaders, in leading by example, are expected to walk the talk by making use of ICT tools in the performance of their leadership role during technological development. Consequently, in the online space, leaders need to appropriately use modern technology to interact with virtual team members so that virtual team members can relate.

It was also exposed that some workers, owing to the fact that social media has been adopted for use in the formal discussion by telecommunication companies, are mostly observed to be active on one social media platform or the other during working hours. This attitude mostly does not favor the attainment of organizational objectives. Leadership, therefore, has to ensure that employees remain productive no matter how often they are distracted by social media while in the midst of work. Making use of conferencing apps for regular interaction with virtual team members, use of WhatsApp for sharing official documents, use of YouTube content for documentaries and videos related to work, text messages and emails are channels that organizational managers employ to monitor and ensure that the employees remain productive. Another way management ensures that employees remain productive during technological development is by limiting access to some social media sites during official work time. However, before official work starts or right after work when the project or task at hand has been completed, team members are given unlimited access to the internet for personal, informal use. The restriction of access during office hours is to ensure optimum productivity. The department responsible for this is the information technology (IT) department.

In the comparison of traditional leadership to e-leadership, it was found that e-leadership is equally as effective as traditional leadership so far as employees have their objectives aligned with the objectives of the organization. For employees whose personal objectives do not align with that of the

organization, thus making the implementation of e-leadership challenging, it is better that authorities discipline them. According to a participant, "*if you set a goal and somebody does not fit in or align, there must be disciplinary action against the person. Once a person accepts to be an employee, the person agrees that personal objectives will align with that of the organization which have been broken down into smaller units at the departmental levels, team levels and individual levels so basically to get people aligned, it all depends on leadership making sure that virtual team members buy into organizational vision and mission*".

4.2 Proper supervision of team members

E-leadership provides supervision to team members regarding the actual work being done. Despite the fact that with e-leadership, management has very limited physical contact with the team members, the use of available systems or software programs can assist management to provide the needed supervision. A participant stated that "*the technology bit of e-leadership is very key because that is what is used for performance management. For sales persons, for example, we have systems that we call 'sales force' where you put all your meeting appointments, reports and opportunity identifications in. So basically when you identify a client, you must put it in the system. After the meeting, put minutes in the system and record opportunities. So in the system, there is the opportunity pipeline. In that system, you can tag customer service, operations or anybody in the organization whose help will be required to make the opportunity materialize. The whole system is such that when you go in there, you can tell what is happening to all potential clients as well as what everybody needs to do to help. That kind of measurement system that ensures that everyone is in, is a way we appraise ourselves or we are able to follow up the performance of the organization. I know similar systems run through the banks and a few other places. This way, everybody from going to the screen, will see who is responsible for a particular activity, its current status and what needs to be done. Managers and leaders of all these groups will be monitoring these reports and asking the questions that need to be asked and helping to meet all the deadlines*".

Another participant, on the subject of the provision of supervision, explained what happens in his organization. "*Generally for my organization, what we do is that we have every manager receiving weekly reports from their team members. Others are system based reports. The system is designed such that at any point the manager can go into the system and pick a report. By the entries you have done, the system is designed so that the manager just sets a time, say every Friday at 10:00 a.m., I go into the system extract a report. If there is the need for further discussions, the one-on-one weekly meetings will be an avenue to discuss all matters arising from the report. Otherwise, depending on the intensity, an emergency meeting can be called for further discussions*".

4.3 Show empathy towards team members

The final role, as found in this study, of e-leadership in adapting to rapid technological development, is the show of empathy towards team members who tend to face challenges in the online space. Considering the fact that all employees do not learn at the same pace, some pick up new technology skills quickly while others pick up at a much slower pace. For team members who belong to the latter group, e-leadership serves as an avenue for struggling employees to learn. According to a participant "*over the years, general leadership has changed. Now we are not talking about bosses or managers but we talk about leaders. People who should have empathy. People who should understand you and not only performance driven. Any staff wants to feel like this person is leading me to my next ability that I didn't even know I had. I think for any organization, this is key. They always say that people don't normally leave their organization, they leave their bosses. If as a leader, you make things unbearable for your staff, they will leave. E-leadership is therefore very key. People have become great people and they didn't know they had it in them. It took a leader to say 'look, per what I am observing, beyond all you're doing, you can also do that. Can you take a look at it? I know you can do it'. Then out of that direction, they become super humans or super achievers in the organization. E-leadership is therefore very important"*.

Another participant recounts the condition at work where managers do not boss over their subordinates but rather real leaders who in addition to giving directives, also help employees identify

themselves. According to the participant, "*Every week, there is a special time with our leaders where we have maybe about one hour depending on how much time we have for ourselves. At the meeting we ask ourselves questions related to personal growth, career growth, what next, how can I help you get better? This is different from the usual appraisal systems, end of year meetings and others. They are all geared towards what else you can do besides where you are now. What is your next step? How can I help as a leader. I am really liking that a lot. Its very helpful*".

4.4 Discussion

The study found that e-leadership has resulted in a significant reduction in face-to-face meetings among virtual team members and their leaders; telecommunication companies have adopted the use of social media for formal communication; virtual teams are used when adapting to technological development; telecommunication companies are able to advance in the online workspace; management's readiness to offer support for team members has improved; and virtual teams have an improved communication channel established through virtual leadership while adapting to technological advancement. It was also found that during technological development, e-leadership ensures that there is effective change management, proper supervision of team members and a show of empathy towards team members who encounter challenges in the virtual space.

The findings of the study are in line with previous studies (A. Bans-Akutey & B. Tiimub, 2021; Darling & Nurmi, 1995; Kirkpatick & Locke, 1991; Tiimub et al., 2020; Wing, 1988; Zhu, Chew, & Spangler, 2005) who found that the role of e-leadership in technological advancement cannot be overemphasized. While employees adapt to rapid technological change, managers have a critical role to play. Failure to perform this task effectively may result in the failure of some workers who cannot cope with the pressure of change. Rather than threatening such employees with thetermination of their appointment, managers or leadership can remove all such triggers of insecurity for virtual team workers by providing the required guidance that will nurture slow-learning employees to become high achievers.

Consequently, managers need to be encouraged to employ the use of e-leadership while team members adapt to technological change. Sometimes, the use of technology can complicate the most basic of tasks for an employee who is not so technology inclined. Knowing that through the same virtual means, management can be contacted to provide the necessary support can bring relief to distressed employees in a virtual team. With time, the slow pace of an employee or team member in adapting to technology will be eliminated as team members gradually get comfortable with the online space This also aligns with Vought (2017) and Van Wart et al. (2017). Leadership is a determinant as to whether team members get to enjoy work in the online space or not. The leader's supervisory role has a lot to do with whether employee productivity is achievable in the virtual space or not.

E-leadership ensures that while supervision is effectively done in the online space, strong relationships are also built with the same channel. The study showed that managers have adopted the use of social media for official purposes as implied in Anita Bans-Akutey et al. (2022). However, there should be a clear distinction between time for work and time for social networking. If this is not done, the productivity of virtual team members may be negatively affected.

Finally, results indicated that leaders are able to show empathy to employees in the virtual space while adapting to rapid technological development. In a case where the leader is experienced in the use of technology, he serves as an effective resource for virtual team members who work with him, thus becoming a pacesetter or an example which is in line with the finding of Zervas and David (2013). This prevents employees from getting into a state of insecurity.

5. Conclusion

Despite the fact that all findings in the study align with previous literature on the subject, it is worth noting that most team members are prone to facing challenges while adapting to technological development. E-leadership tends to decrease the level of difficulty that virtual team members may face. Managers need to be consistent with the application of the e-leadership concept no matter how

sophisticated technology gets. It is therefore recommended that managers continue with the use of e-leadership while providing guidance for challenged virtual team members. Tailored training sessions can also be organised for employees who are slow in picking up new technology skills.

5.1 Limitation

The study was limited to employees and customers of telecommunication companies in Ghana. They were mainly from the three major telecommunication operators in Ghana. Service providers and other third-party companies were not considered in this study. Also, the research respondents did not have any physical encounters with the researcher. Research instruments were administered online. This implies that employees and clients who do not have any presence online could not participate in the study.

5.1 Suggestion

Future studies can focus on business types other than businesses in the telecommunication industry. Third-party companies and service providers of telecommunication businesses may also be considered. Future research may also consider administering research tools in-person. It is finally recommended that future research focuses on the effect of e-leadership on managers; as in this study, the focus was on employees and clients.

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