

Technologies and Business Practices of Mobile Network Service Providers in Ghana

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ABSTRACT

The relationship between competition and the performance of telecommunications markets has received significant attention over the last two decades. Telecommunication is one of the major economic sectors of Ghana as a result of the country's liberal policy on Information and Communications Technology. The study examined the technologies and business practices used by AirtelTigo Ghana Ltd, one of the telecommunication networks in Ghana. In addition, the study not only sought to determine or investigate the nature of technologies and business practices used by AirtelTigo, but to explore the diverse challenges and reasons which account for the organization's low performance in the Ghanaian telecommunications industry as well as to analyze the possible solutions to address these problems. The study adopted a survey research design and used both staff and subscribers of AirtelTigo Ghana Ltd as participants. Purposive sampling was employed to select 30 staff, while simple random sampling was used to select 80 subscribers. A total of 110 respondents were therefore used for the study. The study used a questionnaire and interviews to gather data, while the analysis was done with Statistical Package for Social Sciences (SPSS). The results revealed that AirtelTigo uses 3G technology to provide services to its customers; however, the services they offer are not to the satisfaction of their subscribers. The study recommended marketing intelligence to help the organization achieve a competitive advantage. Also, the organization should consider upgrading their system to 4G as it will allow them to provide faster internet services.

Keywords

Technologies; network; service providers; mobile; subscribers; AirtelTigo

1. INTRODUCTION

Mobile technology is vital in organizations which seek to be relevant in the 21st century. As a result of the adaptability of mobile technology, it has many advantages though there are also disadvantages which can pose a threat to organizations. Organizations need to take into consideration the pros and cons of utilizing mobile technology in their operations [4][8][13]. The strategies employed in businesses have changed due to the incorporation of technological tools. These have led to the automation of tasks, simplified how business is conducted and made it more accessible and effective [6]. Consequently, productivity has significantly increased. Mobile technology has enormously influenced how business is done globally. There has been tremendous growth in the usage of mobile devices in the last decade [20].

World Bank report (2013) indicated that the main sectors for investment in Ghana were 65% in connection with ICT, 8% for communication and 27% distributed among the various sectors

of public administration [7]. After the launch of the first mobile phone network in Sub-Saharan Africa in 1992, Ghana has become one of the region's most competitive mobile markets [17]. There were initially six telecommunications companies in the country; Mobile Telecommunication Network (MTN), Tigo, Vodafone, Airtel, Expresso and GLO, but this number has then reduced to four with the merger of Airtel and Tigo and the dying off of Expresso. Ghana has one of the most competitive telecommunications markets in the sub-region and was a pioneer in mobile telephony and data service development. The country was part of the first countries on the continent to have an internet connection [2].

The incorporation of mobile devices continues to advance and develop trade and industry. Mobile technology and accessibility continue to shape how business communicators make, conceive and transmit information. Usually, the introduction of new services for mobile communications systems is demonstrated very attractively. These services are presented as adaptable and are guaranteed to improve communication significantly. However, as the frameworks employed become more sophisticated and varied, so do the difficulties of their management. The management of the technologies utilized in fixed telephony systems has developed towards supporting packet-based services in a progressively more open setting [10].

It was widely believed that 3G, now 4G services, would transform how people communicate and interconnect [3][21][22]. Users would take centre stage while systems would have the capacity to deal with intelligent user profiles, proactive service selection, provision of context-aware services and universal computing [12][19][24]. Overseeing, billing and regulating these services make old-fashioned business models insufficient and require new methods. The most important features of mobile technology are mobility and portability [14]. That is the capacity to access mobile services everywhere via wireless networks and different devices.

Up to the present time, mobile technologies have focused on a consumer-oriented approach, and most developed applications concentrate on voice communication instead of wireless data transformation [14]. Although there is a common idea that mobile technologies can be used in business, not much has been done to explore their role in improving business processes, the effects of mobile technologies, or what crucial elements influence the success or failure of mobile technology applications. Utilizing mobile technologies can offer organizations two advantages in their business operations. Firstly, they would aid communication among employees, clients and suppliers. As a result of the improvement of communication concerning how information is efficiently and instantly transmitted, mobile technologies could cause a surge in an organization's productivity and profitability. Secondly,

they revitalize business procedures by modifying data access patterns. For instance, insurance agents can utilize mobile technology to give timely services to their clients.

Studies have shown that in the telecommunication industry, a positive relationship exists between the service quality dimensions (reliability, responsiveness, tangibility) and customer satisfaction [16][18]. Another study performed to investigate the relevance of customer-perceived service quality in determining customer overall satisfaction regarding telecommunication demonstrated that reliability and network quality are the key factors in evaluating overall service quality. Also, it was highlighted that tangibles, empathy, and assurance should not be disregarded when assessing perceived service quality and customer satisfaction. This study proved a close link between service quality and customer satisfaction [15].

The study will help to provide some insight for mobile network service providers on the need to provide technologies and business practices which benefit their customers. The study would fill the gap in the available literature about the relationship between mobile money services and rural banks. This study will add to the current literature on mobile telecoms in Ghana for further studies. This study will contribute to research conducted in the fields of financial innovation and intermediation.

Available research has shown the various obstacles mobile service companies encounter such as application challenges, network problems, and infrastructure and security challenges [1][5][9]. However, in different countries, mobile network service providers have several technologies and business practices that may either fail due to cost, competition and low customer satisfaction or may also increase the chances of their success in ways like optimized operations, improved customer experience, enhanced collaborative efforts with colleagues and create better marketing strategies. According to [23], customer satisfaction should be seen as a multi-dimensional construct just as service quality meaning it can occur at multi-levels in an organization and that it should be operationalized, along with the same factors on which service quality is applied. As a result, this study sought to investigate the nature of technologies and business practices used by AirtelTigo Ghana Limited and to explore the reasons for their operational and financial challenges.

2. OBJECTIVES

1. To assess the nature of technologies and business practices used at AirtelTigo Ghana Ltd.
2. To explore the diverse challenges and reasons which account for the organization's poor performance in the telecommunications industry.
3. To recommend some possible solutions which could be used to address the problems at AirtelTigo Ghana Ltd.

3. MATERIALS AND METHODS

The study highlights the target population, sampling techniques, sample size, data collection techniques and processes such as the sort of information collected, questionnaire development and the full implementation of the instrument. In addition, the tools used to analyze the data collected and the validity, as well as reliability of the data collected, are discussed. Concerning this study, the survey research design was adopted to examine the type of technologies and business practices employed by mobile network service providers in Ghana. The study focused on AirtelTigo Ghana Limited in the New Juaben Metropolis in the

Eastern Region of Ghana. The population used in this study comprised the staff and subscribers of AirtelTigo Ghana Limited in the New Juaben Metropolis. Thirty staff members and eighty subscribers of AirtelTigo were selected to participate in the study out of a population size of 500 active AirtelTigo subscribers. The simple random sampling technique was used to select subscribers of AirtelTigo to participate in the research. However, staff members in the company were selected using purposive sampling. This method was employed since not all the staff members had knowledge of the business practices and technologies used by AirtelTigo Ghana Ltd and might not provide answers to meet the objectives of the studies. The sample size used though relatively small served as a good representation of the larger population. A questionnaire was administered to the participants to gather data. The questionnaire comprised open-ended and closed questions to solicit different answers. Additional information was gathered by analyzing and assessing other research focused on other telecommunications companies. The secondary data used were taken from published Financial statements of Millicom Ghana, as well as transaction log books of selected mobile money vendors for AirtelTigo.

The analysis done was quantitative in nature. The study used the Statistical Package for Social Sciences (SPSS) [11] version 21.0 to analyze the data gathered. Frequency distributions and tables were employed in the presentation of data. The discussion and analysis were done using the mean and standard deviations, percentages, correlation and regression analysis tools.

4. RESULTS AND DISCUSSION

Analysis of the data gathered was carried out to determine the kind of technologies and business practices utilized by AirtelTigo in their operations, as well as to determine the reasons which account for their seemingly poor performance in the telecommunication industry in Ghana.

4.1 Sample and Response Rate from Respondents

The study made use of a sample size of 110 respondents which comprised 80 subscribers and 30 staff members of AirtelTigo Ghana. A total of one hundred and ten (110) copies of the questionnaire were handed-out face-to-face. However, ninety-three (92) were answered and returned, which consisted of 67 copies of the questionnaire administered to the subscribers and 25 copies given to the staff members. Eighteen (18) of the respondents did not return the questionnaire administered to them

4.2 Demographic Characteristics

Under the demographic characteristics, variables such as gender, age, educational background and the number of years a participant has been using the services of AirtelTigo were collated. On the other hand, staff members answered these questions and how long they had been working with the organization. The demographic features are presented below in tables and pie charts.

i. Gender Distribution of Respondents

Table 1: Gender Distribution

Gender	Frequency for Subscribers	Percentage (%)	Frequency for Staff	Percentage (%)
Male	29	43.3	16	64.0
Female	38	56.7	9	36.0
Total	67	100.0	25	100.0

Table 1 represents the gender distribution of participants. From the table, out of the 67 subscribers who participated in the study, 43.3% of the total population were males, while 56.7% were females. On the other hand, the population of the employees of AirtelTigo who participated in the study constituted 36% females and 64% males.

ii. Age Distribution of Respondents

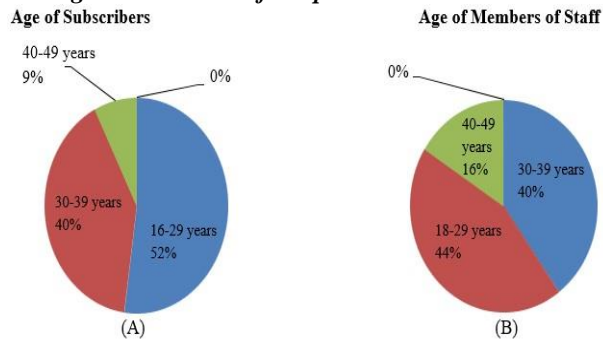


Figure 1: The age distribution of the total population for the subscribers and employees of AirtelTigo Ghana who participate in the study

From Fig. 1A, most of the subscribers of the AirtelTigo network are teenagers and youth. Consequently, the age ranges from 16 to 29 constitute 52% of the total subscriber population, while the ages 30 to 39 make up 30%, and the ages 40-49 make up 8% of the population. Also, in 1B the ages of employees between 18-29 years make up 44% of the total population of staff members. This shows how young the staff members of AirtelTigo in the New Juaben metropolis are. The ages 30-39 represent 40% of the entire population, while the ages 40-49 years represent 16%. Even though an age limit was not set for the study, the sample population that agreed to participate fell within the age ranges indicated in figures 1A and 1B. Hence, the maximum age range for the participants is 40-49 years.

iii. Educational Level

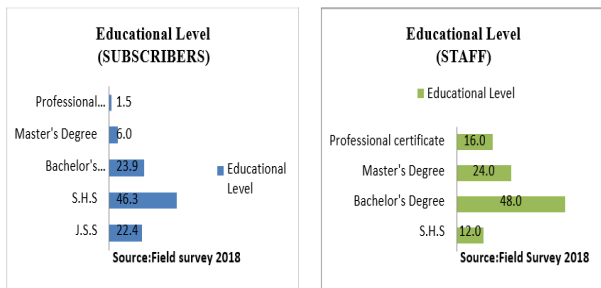


Figure 2: Educational level of Subscribers and Staff

From Fig. 2A, which represents subscribers, 46.3% of the population were senior high school graduates, while 23.5% of the total population had Bachelor's degrees. Those who had

completed junior high school made up 22.4% of the population while those with Master's degrees and professional certificates constituted 6.0% and 1.5%, respectively. Furthermore, in Fig. 2B, Bachelor's degree holders constituted 48.0% of the total population of AirtelTigo employees in the New Juaben metropolis, Master's degree holders were 24% of the population while Professional certificate holders and senior high school graduates were 16.0% and 12.0% respectively. The above statistics indicate that AirtelTigo Ghana has staff members with high educational backgrounds.

4.3 How long respondents have been subscribed to AirtelTigo

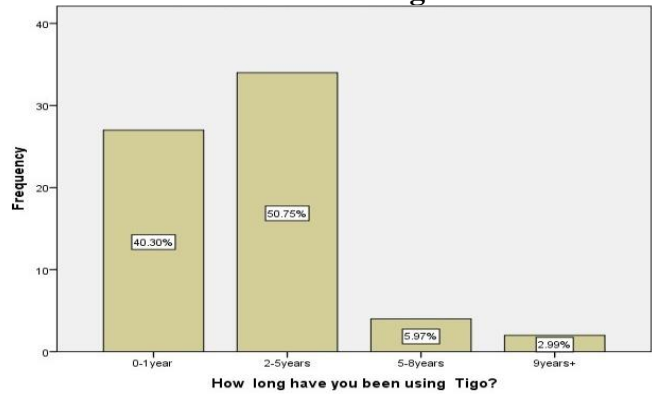


Figure 3: Duration of service usage

Fig. 3 shows how long the subscribers have been subscribed to the AirtelTigo network. From the figure, 50.75% of subscribers had been using AirtelTigo for 2-5 years, 40.30% had been using the network for less than a month to one year, while 5.97% had used the network between 5-8 years and 2.99% had used the network for 9 years and above. This indicates clearly that a majority of the subscribers who participated in this study had been subscribed to the AirtelTigo network for a long time, hence they were in a position to give their views on the challenges and best business practices the telecommunication uses and could employ.

4.4 How long have you been working with AirtelTigo?

Table 2: How long employees have worked with AirtelTigo

Years of employment	Frequency	Percentage with AirtelTigo
0-1 years	10	40.0
2-5 years	14	56.0
5-8 years	1	4.0
Total	25	100.0

This table shows how long the employees of AirtelTigo who participated in the study have been working with the organization. Fourteen (14) of the employees had worked with AirtelTigo for between 2 to 5 years; this number represents 56.0% of the total number of employees who participated in the study. In addition, ten (10) of the employees had been working with the organization for less than a month to one year (0-1 year) which represents 40%, while one respondent had worked with the AirtelTigo branch in New Juaben for between 5 to 8

years, which represents 4% of the employee population who took part in the study.

4.5 Level of Management of AirtelTigo Employees

Levels of Management

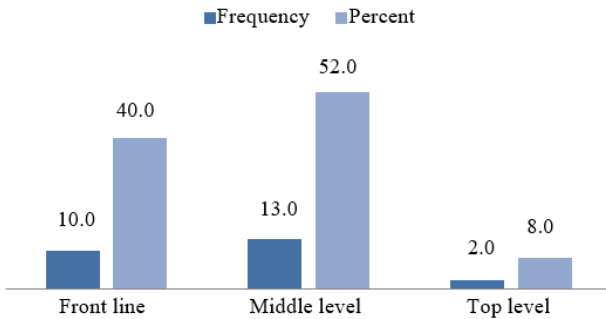


Figure 4: Levels of Management in AirtelTigo Ghana

The employees of AirtelTigo were asked to select the level of their position in the organization from a list of options which comprised the lower level to the top level; the results of this question are presented in Fig. 4. The figure shows that middle-level management staff represents 52.0% while 40% of them fell under the lower management level and top management members constitute 8% of the population of staff of the AirtelTigo New Juaben branch who took part in the study.

4.6 The Nature of Technologies and Business Practices used by AirtelTigo

In this section, the findings of the study based on the research objectives are presented. The objectives of this study were to assess the nature of technologies and business practices used at AirtelTigo Ghana Ltd, to explore the diverse challenges and reasons which account for the organization’s poor performance in the telecommunications industry and analyze the possible solutions which could be used to address the problems at AirtelTigo Ghana Ltd.

Table 3: Services used by subscribers

Services	Count	Percentage
Voice calls / SMS user	Yes	50 75%
	No	17 25%
Internet user	Yes	38 57%
	No	29 43%
Mobile money user	Yes	67 100%
	No	0 0%

Insurance	Yes	22	33%
	No	45	67%

The table is made up of the responses of subscribers of the AirtelTigo network when they were asked to answer “yes” or “no” about which services they use on the network. Users of Voice calls and Short Messages were 50 subscribers out of the 67 AirtelTigo subscribers who participated in the study, while those who used the network purposely for internet services were 38. All 67 respondents had subscribed to the mobile money (AirtelTigo Cash) service. However, only 22 of the subscribers had subscribed to the insurance service provided by the network. These statistics indicate that the majority of AirtelTigo subscribers use the network because of its mobile money service. This might be because it makes transferring or sending money from person to person easier and more convenient.

4.7 Technologies used by AirtelTigo

Table 4: Technologies Used by AirtelTigo Ghana

Technologies	Frequency	Percentage
2G	Yes	19 76%
	No	6 24%
3G Network	Yes	20 80%
	No	5 20%
4G Network	Yes	11 44%
	No	14 56%
Mobile Money	Yes	25 100%
	No	0 0%
Mobile Commerce	Yes	19 76%
	No	6 24%
Interactive Voice Response	Yes	20 80%
	No	5 20%

In the telecommunication industry, the type of technologies used by a network determines the products it can create for its customers and to attract potential customers. The table above represents the list of technologies being used by AirtelTigo. The employees of AirtelTigo who participated in the study were asked to select which technologies were being used by the organization. From the table, 19 respondents indicated that AirtelTigo has 2G technology. This technology is the basis for mobile communication. Also, 20 respondents indicated that AirtelTigo uses 3G technology, this technology helps in the fast transmission of data online. This technology was developed as a result of the smartphone revolution. With 4G network technology, not every telecommunications company operating in Ghana has the license to harness this technology.

According to the responses of the respondents, 14 of them answered “No” to AirtelTigo’s use of the 4G network. This was confirmed by a post on frequencycheck.com, which indicates the frequency band AirtelTigo runs at the highest speed. The network runs on B1 (2100) which is available on the UTMS interface on the 3G technology. However, 11 respondents said yes to AirtelTigo having a 4G network. Furthermore, 25 respondents answered “YES” to AirtelTigo’s use of mobile money technology. This technology is a revolutionary one which is changing the informal sector in Africa and other developing countries. Additionally, 19 respondents answered “Yes” to AirtelTigo running a mobile commerce technology. This technology makes it easier for mobile phone users to pay their bills and even shop with their devices. To improve customer service, most organizations are using interactive Voice Response technologies. Thus, 20 respondents answered “Yes” to AirtelTigo’s usage of the IVR technology to help to improve the customer experience of their subscribers.

4.8 Reasons for the low performance of AirtelTigo Ghana Ltd.

Table 5: Quality of service provided by AirtelTigo

		Frequency	Percentage
Clearness of calls	Yes	22	33%
	No	45	67%
Response to complaints	Yes	28	42%
	No	39	58%
Call completion rates	Yes	19	28%
	No	48	72%
Interconnectivity among networks	Yes	25	37%
	No	42	63%
Text messaging and delivery of text messages	Yes	40	60%
	No	27	40%
Interactive Voice Response	Yes	22	33%
	No	45	67%

To gain insight into other reasons which account for the low performance of AirtelTigo in the telecommunications industry in the country, the subscribers were asked to indicate if they were satisfied with the services provided by AirtelTigo Ghana, while the staff were asked to state the challenges their organization faces. From the table above, 45 respondents selected “NO” for clarity of calls on the network as well as internet connectivity. Due to the poor delivery of services such as call clarity and internet connectivity, AirtelTigo is not performing as well as its competitors in the telecommunications industry. 39 respondents answered “No” to the network’s response to customer complaints. Good customer services help organizations retain and gain clients, however, AirtelTigo based on the response of the participants do not provide good customer care services. Additionally, 42 respondents answered “No” to interconnectivity among networks, while Text messaging and delivery services had 40 respondents answering “YES”.

4.9 Challenges Facing AirtelTigo Ghana

The challenges faced by AirtelTigo as they deliver services to their customers are presented in the figures below.

Fig. 5 demonstrates the responses of the population to the statement that “economic factors such as inflation and the availability of disposable income influenced the performance of the company”. 64% of the population agreed with this assertion, while 34% strongly agreed to this on a scale of 1-5, which is strongly agreed, agreed, strongly disagreed and neutral, respectively. This is depicted in the diagram below.

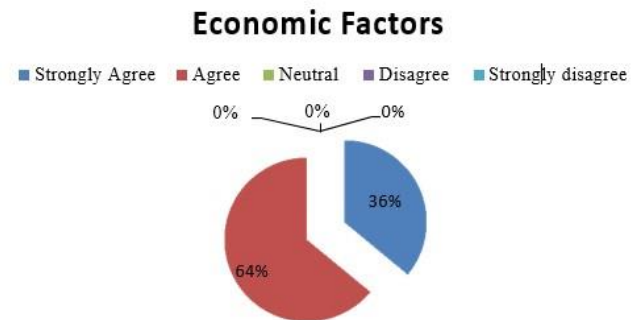


Figure 5: Economic Factors

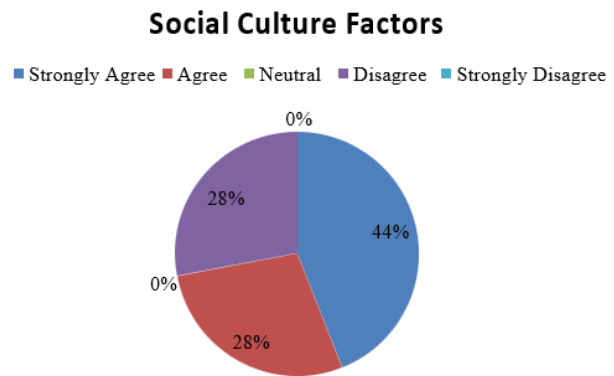


Figure 6: Social Culture Factors

In Fig. 6, 44% and 28% of the population strongly agreed and agreed, respectively with the statement that “social and cultural issues have affected AirtelTigo’s performance”. However, 28% of the network’s staff who participated in the study disagreed with this assertion.

Suppliers, buyers, product substitutes and increase in competition among other companies affect AirtelTigo’s performance

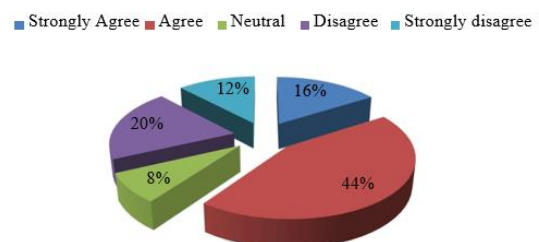


Figure 7: Staff Assessment of Market Competitiveness

Moreover, to know how the competition within the telecommunications industry was affecting AirtelTigo’s performance, respondents were asked to grade their opinion on whether “suppliers, buyers, product substitutes and increase in competition among other companies affect AirtelTigo’s performance”. 44% and 16% of respondents agreed and

strongly agreed respectively to the assertion that “suppliers, buyers, product substitutes and increase in competition among other companies affect AirtelTigo’s performance”, while 8% percent were neutral. However, 20% and 12% of the population disagreed and strongly disagreed respectively.

Poor managerial practice is a contributing factor in the poor performance of AirtelTigo

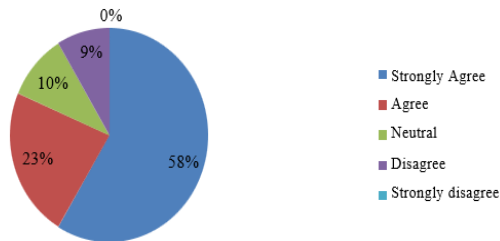


Figure 8: Staff Assessment of Managerial Practices

In addition, to find out how management practices affect the performance of AirtelTigo, the population were asked to answer the statement “Poor managerial practice is a contributing factor to the low performance of AirtelTigo” 60% of the population agreed while 32% strongly agreed to this assertion. However, 8% strongly disagreed. It is presented in Fig. 8 above.

Heavy taxation on mobile operators has led to unnecessary high cost of services for consumers

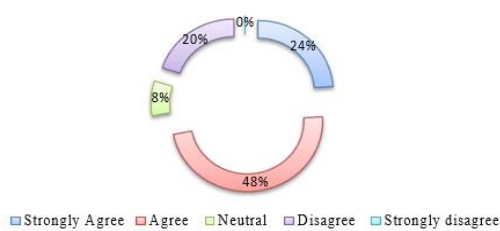


Figure 9: Tax Obligation

From the responses given by respondents, 24% and 48% of the population strongly agreed and agreed, respectively to the assertion that “Heavy taxation on mobile operators has led to the unnecessarily high cost of services for consumers”. 8% were neutral, while 20% of the population disagreed.

According to the findings, despite the different services and technologies such as 2G and 3G internet connections and Interactive Voice Response (IVR) that AirtelTigo offer, subscribers are not satisfied with some business practices. Some of these practices were how AirtelTigo responded to customer complaints, their call completion rate, network interconnectivity, the clarity of voice calls and internet connection were rated as poor by subscribers of the network.

The results indicate that economic factors such as inflation in the country affect the cost of maintenance of the organization’s equipment used for service provision. Also, social-cultural issues affect the performance of AirtelTigo in the telecommunications industry. Based on the demographic information of the subscribers who participated in the study, a majority of them were students, hence they do not possess much disposable income to spend on the network. Moreover, poor managerial practices affect the operations of AirtelTigo in the New Juaben metropolis, as cited in the field survey, 59% of the total staff population attested to the fact that poor managerial practices affected the operations of AirtelTigo.

5. RECOMMENDATIONS

The following recommendations have been proposed based on the findings of the study;

1. AirtelTigo company should use marketing intelligence to help them to achieve a competitive advantage in the telecommunications industry. This assertion was strongly agreed to by 44% and agreed to by 30% of the respondents.
2. AirtelTigo should look into forming new strategic partnerships to help the organization improve its performance to gain more subscribers. This assertion was agreed to by 40% of the respondents, while 52% strongly agreed.
3. The incorporation of new technologies will improve performance and attract more customers. Using 4G technology will attract more customers as smartphone users want high-speed internet.
4. AirtelTigo Ghana Ltd should establish the best management practices to help the organization perform at its optimum.
5. Further study is recommended on the relationship between internet accessibility and business performance for Small and Medium Enterprises SMEs.

6. CONCLUSION

AirtelTigo Ghana Limited uses several technologies to provide quality services to its customers; however, these services are not to the satisfaction of its subscribers. It is pertinent AirtelTigo works on novel strategies to deliver services that would satisfy their subscribers and keep them on the network. Customer satisfaction does not necessarily lead to customer loyalty; however, it is believed that customer satisfaction fuels loyalty. The duration of service usage demonstrated that the respondents would likely keep using the network as long as it can satisfy their changing needs. The results showed that if AirtelTigo addresses some of the challenges listed in this research, they might perform well and retain more customers.

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