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## An Assessment of the Influence of Organizational Innovation on Performance of Mobile Telecommunication Companies in Rwanda: A Case Study of MTN, Rwanda

**Joseph Mwita Nyaimore**

Student, Jomo Kenyatta University of Agriculture and Technology, Rwanda

**Dr. Kule Julius Warren**

Lecturer, Jomo Kenyatta University of Agriculture and Technology, Rwanda

**Dr. Jaya Shukla**

Lecturer, Jomo Kenyatta University of Agriculture and Technology, Rwanda

### **Abstract:**

*The aim of this study was to assess the effect of organizational innovation on performance of mobile telecommunication companies in Rwanda. Specific objectives for the study included; to evaluate the effect of administrative innovation on performance of mobile telecommunication companies in Rwanda, to evaluate the effect of technological innovation on performance of mobile telecommunication companies in Rwanda, to evaluate the effect of marketing innovation on performance of mobile telecommunication companies in Rwanda and to establish the relationship between organizational innovation and performance of mobile telecommunication companies in Rwanda. The study was conducted at MTN Centre in Kigali, Rwanda. It adopted a descriptive research design that included collection of primary data using questionnaires. A total of 133 MTN employees at MTN Centre in Kigali formed the target population. The study population was drawn from; Marketing department, Human Resource Management department, Corporate Affairs department and Product development department. Sample size of 100 samples was determined using Slovin's formula. Both stratified random sampling and simple random sampling was used to obtain samples. The study used questionnaire as the primary data collection tool. Descriptive statistics was generated through descriptive analysis to obtain frequencies and percentage of study variables. Inferential statistics specifically Pearson correlation and regression analysis was generated to determine the relationship between organizational innovation and company performance. Statistical Package for Social Science was used as the appropriate tool for data analysis. Results were presented in tables. The study findings indicated that administrative innovation ( $r= 0.512$ ,  $P$ - value  $< 0.01$ ), technological innovation ( $r= 0.605$ ,  $P$ - value  $< 0.01$  and marketing innovation ( $r= 0.541$ ,  $P$ - value  $< 0.01$ ) were significantly associated to company performance.*

**Keywords:** Organizational innovation, Administrative innovation, Marketing innovation, Technological innovation

### **1. Background of the Study**

The capacity to innovate is among the most important factors which influences the business performance and as such, innovativeness is amongst the unique culture which enhance the firm performance. Innovation can take various dimensions and can occur at various levels in a firm or industry. With the ever increasing level of competition in the business world as well as shortened product life cycles, the need for companies to be able to generate innovations has become more important than ever. Innovation has been linked to improved company's performance competitiveness and sustainability (Artz et al., 2010). Currently, with regards to the growing competition and the need for companies to survive and remain profitable, innovation has become a critical aspect for almost all companies (Lipit, 2006). Most of the products in various markets today are vulnerable to changing customer needs and tastes, new technologies, shortened product lifecycles, and increased international competition. With this in mind Geroski et al., (1993) posits that the need for various business entities to embrace innovation irrespective of their size is paramount for improved performance and survival in the market.

Rwanda's history of mobile telecommunication companies was pioneered by MTN Rwanda which received a license in 1998 to provide GSM services for both post and prepaid subscribers. As of 2014, MTN which is a South African based company had about 2,900,264 subscribers (NISR, 2014). MTN enjoyed monopoly in Rwanda for 10 years after which Rwandatel joined the mobile market. In attempt to attract subscribers, Rwandatel introduced 3G network which was not being offered by MTN. This quickly attracted subscribers reaching over 100,000 in less than 2 months of operation. Later, Tigo which is the third telecommunication company entered the mobile communications market stiffening the competition within the market (RURA, 2013).

Airtel Rwanda later joined the market in March 2012. Competition between the three Rwandan mobile service providers; MTN, TIGO and Airtel has been increasing by day with each company coming up with new innovations as soon as their competitor launches a new innovation. For example, when MTN Rwanda launched a voice messaging of celebrities through Unstructured Supplementary Service Data (USSD) code, Tigo Rwanda launched 4G LTE broadband. Likewise, Airtel, which is regarded as most the innovative operator in the market, scrapped off mobile money charges to out-compete Tigo Rwanda (RURA, 2013).

Various studies have been done trying to understand these dynamics in the telecommunication industry and strategic innovation. McAdam and Keogh (2004) found out that the firm's inclination to organizational innovations was of vital importance in the competitive environments in order to obtain higher competitive advantage. Therefore, this study sought to assess the effects of organizational innovation on performance of mobile telecommunication companies in Rwanda.

### *1.1. Problem Statement*

Poor company performance, as evidenced by declining revenue as well as decline in market share is a concern for any organization. Indeed, this is not only a concern to top executives alone, but also to every stakeholder in any organization. For instance, with decrease in revenue with no corresponding decrease in costs would imply a reduction in the firm's profits, which in the long run will erode shareholders' investment. On the other hand, such a firm will become unsustainable leading to restructuring which may end up with job losses. If the situation is not corrected on time, such a firm would end up winding up, leaving devastating effects in an economy.

In order to address unsatisfactory firm performance, firms have employed different ways, among them being use of innovation. While a number of studies have established a direct relationship between innovation and performance, the influence of organizational innovation has not been investigated exhaustively and much attention has been on the relationship between innovation in general and performance (Geroski, 2005; Damanpour, and Evan, 1999; Gunday and Dutton, 2011). Organizational innovation is considered as critical requirement for the growth and performance of organizations. It has a considerable impact on companies' performance by producing an improved market position that conveys competitive advantage and superior performance (Walker, 2004).

Although the study conducted by Van Auken et al., (2008) linked administrative innovation with organization performance, many companies have not viewed administrative innovation as a key aspect of organizational innovation that they can focus on in their quest for improved performance. According to Sundgren et al., (2005), inadequate or failure of companies to invest in administrative innovation has contributed to poor relationship between employees as well as systems failure which has greatly affected company's performance. Recent decades have seen a remarkably increase in concern with innovation among interdisciplinary scholars (Fagerberg and Verspagen, 2006). Despite the great importance of organizational innovation, (Bruland and Mowery, 2004), mainly technological innovation has received more attention due to the availability of statistics.

In their studies, Hajar (2015) and Atalay, (2013) have shown evidence of a positive relationship between organizational innovation and company performance. Study by Gebauer et al., (2012) found that innovation enhances competitiveness and value maximization of the firm. Additionally, Gebauer et al., (2012) were of the opinion that the need for innovation is more to private sector organizations operating in increasingly competitive market and in which case innovation is often a condition for survival. This does not however provide evidence of the need for private or public sectors to focus on organizational innovation in particular. According to (Markides, 1998) organizations that have adopted organizational innovation strategies achieve their success by moving beyond industry norms or sustaining innovations to achieve certain business model innovation, thereby disrupting established competitors and generating value for themselves, their customers and their shareholders.

In as much a number of researches seem to point out that there is a positive relationship between organizational innovation and firm performance, the level of innovation within Rwanda telecommunication industry may not have yielded the much desired performance. For example, as earlier noted, Airtel Rwanda is being described as the most innovative company in the mobile telecoms in Rwanda, how come then this innovation has not translated into superior performance? As per the statics from RURA (2013), Airtel Rwanda had a market share of only 18% as at the end of December 2015 with MTN leading at 47% followed by Tigo at 35%. One would expect that by being the most innovative company it would translate into superior performance, but this appears not to the case in the Rwanda Telecom Industry. These gaps therefore are in line with what the research sought to bridge by assessing the effect of technological innovation, administrative innovation and marketing innovation on the telecommunication company's performance.

### *1.2. Objectives of the Study*

1. To determine the influence of administrative innovation on performance of mobile telecommunication companies in Rwanda
2. To evaluate the influence of technological innovation on performance of mobile telecommunication companies in Rwanda
3. To assess the influence of marketing innovation on performance of mobile telecommunication companies in Rwanda
4. To establish the relationship between organizational innovation and performance of mobile telecommunication companies in Rwanda

### *1.3. Scope of the Study*

The study was carried out in MTN Rwanda headquarters located in Nyarutarama, Gasabo district in Kigali Province, Rwanda. Its main aim was to assess the effect of organizational innovation on performance of mobile telecommunication companies in Rwanda. The study population was 133 employees of four departments of MTN Rwanda based in the head office. The respondents included the directors of Marketing and Strategy, Human Resource, Corporate Affairs and Product development department and as well as staff members in their departments. These four departments are involved in innovation in the company, either directly or indirectly.

MTN was selected as the case study because it is currently the dominant telecommunication company in Rwanda. The dependent variable i.e. performance was conceptualized by the use of market share and total sales growth as the indicators. Independent variables on which the study was based included administrative innovation, technological innovation and marketing innovation.

## 2. Literature Review

A number of theories and approaches that explains organizational innovation of companies have been formulated. This study was based on theories that included; Diffusion of Innovation, Agency theory and Organizational Control Theory.

### 2.1. Diffusion of Innovation Theory

The Diffusion of Innovation Theory developed by Rogers in 1962. According to Stuart (2000), this theory has been used in several disciplines such as political science, public health, communications, technology, and education and is the most widely used theoretical framework in the area of technology diffusion and adoption. It originated in communication to explain how, over time, an idea or product gains momentum and spreads through a specific population or social system. The end result of this diffusion is that people, as part of a social system, adopt a new idea, behavior, or product. Adoption means that a person does something differently than what they had previously (purchase or use a new product, acquire and perform a new behavior). The key to adoption is that the person must perceive the idea, behavior, or product as new or innovative. It is through this that diffusion is possible. Adoption of a new idea, behavior, or product does not happen simultaneously in a social system; rather it is a process whereby some people are more apt to adopt the innovation than others. Researchers have found that people who adopt an innovation early have different characteristics than people who adopt an innovation later (Hager, 2006).

### 2.2. Agency Theory

Agency theory explains the relationship between strategies adopted by the managers and relates them to overall organization objectives and company performance. The theory was propounded by Jensen and Meckling (1976) and views the company as an artificial construct which serve as a center of contracts between individuals. The theory argues that one of the most important contracts a company engages in is the equity of the shareholders on the company's assets and cash flows.

In relevance to company's organizational innovation and performance, the managers will try to adopt a strategy that maximizes their returns and not those of shareholders. Since most manager's remunerations are based on the financial performance of their companies, they are likely to adopt strategic plans that will ensure that the companies are continuously innovative with intention of achieving competitive advantage and increased profits. However, if the returns of the managers do not relate to the company's profitability, the company is less likely to adopt an innovative strategy (Jinet et al., 2004)

### 2.3. Organizational Control Theory

Organizational control theory is a recent perspective with its main proponent being Sullivan (1998). The theory argues that organization strategic innovation involves learning and knowledge accumulation of a trial and error process, rooted in experimentation that is individual and collective. Collective learning is the capacity of an organization to identify new knowledge and to capture it. The theory states that the nature of the organizational innovation process will push companies to either adapt strategies to establish and develop such a process (innovation strategies) or rather adapt alternative strategies (adaptation strategies) that ensure a company's survival without the uncertainty attached to the innovation process. For this, the Organizational Control Theory adopts an evolutionary approach to the analysis of organizational innovative processes. Successful organizational innovation can build in firms "retained" capabilities that will allow the company to survive in the future without innovating (Sundgren et al., 2005). The Organizational Control Theory grasps the complexity of organizations, their environments and the organizational innovation process. For this reason, in such a perspective where uncertainty reigns, this theory recognizes that decision making is not a linear, short leaved process. Within firms pursuing organizational innovation strategies, decision making is a process where every knowledge holder has to contribute (Bitar, 2003).

### 2.4. Conceptual Framework

The conceptual framework below illustrates the relationship between the independent and the dependent variables. Independent variables that were the focus of this study will include three aspects of organizational innovation namely; administrative innovation, technological innovation and market innovation. A conceptual framework for the study was developed basing on existing literature. The dependent variable was the performance of the telecommunication company. Indicators for the company performance in this study were total sales growth and market share.

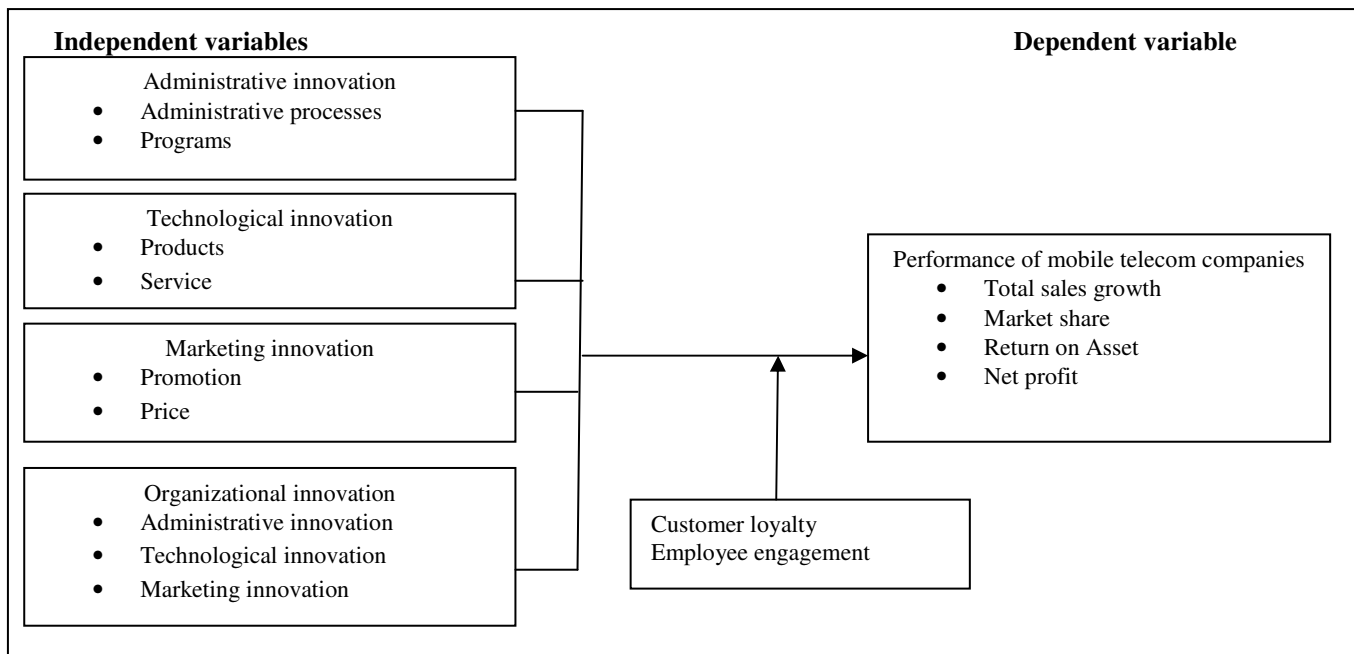


Figure 1: Conceptual Framework

### 2.5. Administrative Innovation

Administrative innovations are different from technological and market innovations in that administrative innovations are oriented toward the efficiency and effectiveness of company' management processes and administrative systems (Damanpour and Evan, 1999). According to Evan (1966), administrative innovation is defined as an idea for a new policy regarding recruitment of personnel, allocation of resources, structuring of tasks and rewarding. Currently, managers in various companies as well as business practitioners are paying much attention to the crucial role of administrative innovations in developing strategies for growth, facilitating organizational change and renewal, and enabling continuous performance (Hamel, 2009). According to Walker (2004) administrative innovation is vital in the company's prospect to compete and sustain performance amidst the ever growing competition among companies.

### 2.6. Technological Innovation

The impact of technological innovation on company's performance is enormous (Yannet al., 2004). Technological innovation that includes product, services, and processes is a tool for economic growth and the application of those inventions to meet emerging business opportunities, and to meet social needs, and environmental challenges (Tajoddini, 2008). It has been defined as the process of converting an idea into a new product, service or process. Technological innovation is a complex set of activities which convert ideas and knowledge into physical reality and real world applications (Tajoddini, 2008). For companies to increase its performance and remain competitive, it should adjust its self to allow for technological innovation. Teece (1996) argue that technological innovation, competitiveness and performance relates to each other positively. This implies that technological innovation is an important component of company's performance, such that a company that adopts technological innovation performs better.

### 2.7. Marketing Innovation

Market innovation includes new knowledge in product price, promotion and distribution. Marketing innovation engages in the improvement of target mix of markets. The objective of marketing innovation is to bring about major changes in product price distribution, placement and promotion. According to Hanvanach et al., (2003), marketing innovation is the capacity to re-conceive the existing industry model in ways that create new value for customers, undermine competitors, and produce new wealth for all stakeholders. Damanpour and Evan (1999) see integrating marketing innovation as a crucial industrial driving force and argue that when companies are successful in introducing new ways to market their products, they can stir buyers' interest, widen industry demand, increase product distribution and lower cost which can alter the competitive positions of several companies and lead to increased performance. Tinoco (2005) argues that through marketing innovation companies are able to generate and implement new ideas that allows creating, communicating, and delivering products to customers in time and in the preferred package hence managing customer relationships.

## 3. Research Methodology

### 3.1. Study Design

The study adopted a descriptive research design using stratified random sampling technique. A descriptive research design determines and reports the way things are (Mugenda and Mugenda, 2003). Creswell (2003) observes that a descriptive research design is used when data is collected to describe persons, organizations, settings or phenomena. The design also has enough provision for protection

of bias and maximized reliability (Kothari, 2008). Descriptive design uses a pre-planned design for analysis (Mugenda and Mugenda, 2003). In this study, inferential statistics, specifically regression analysis and descriptive statistics including frequency distribution and percentages were applied.

### 3.2. Study Population

According to Polit and Hungler (1999) study population is the totality of all subjects that conform to set of specifications, comprising the entire group of persons that is of interest to the researcher and to whom the research results can be generalized. According to the Human Resource Manager at the MTN head office, there are about 133 employees including the directors of Marketing, Human Resource Corporate Affairs and Product development departments as well as staff members in their departments who are instrumental in strategy management processes. These formed the study population for the study.

### 3.3. Sampling Frame

A sampling frame is a complete list of all subjects in the study population from which the researcher will select samples for the study. Table 1 shows the sample frame for this study.

Area of Operation	Population	Proportions
Marketing department	33	25
Corporate Affairs department	47	36
Human Resource department	24	18
Product development department	29	22
<b>Total</b>	<b>133</b>	<b>101</b>

Table 1: Sampling frame

### 3.4. Sample Size

A total of 101 employees constituted the sample size for this study. The sample size was statistically calculated using Solvin's formula  $(n) = N/1 + N(e)^2$

Where;

n is the sample size,

N is the population size (133)

e is the desired level of precision (0.05)

$$n = \frac{133}{1 + 133(0.05)^2} = 101$$

### 3.5. Sampling Techniques

Both Stratified Random Sampling and Simple Random Sampling techniques were used in selecting the study participants. Stratified Random Sampling was preferred for this study since it enables the researcher to reduce selection bias and gives equal chances to all persons within each stratum to be sampled (Särndal, and Carl, 2003). Stratifying the entire population before applying random sampling methods helps ensure a sample that accurately reflects the population being studied. Stratified Random Sampling involves first dividing a population into subpopulations referred to as strata and then applying random sampling methods to each stratum to form a study sample.

According to Vitter (2001), Simple Random Sampling involved compiling a list of the individuals in each stratum. The names were then placed in a bowl and mixed thoroughly. The researcher then picked the names one by one without replacement until a complete sample size was acquired.

### 3.6. Data Collection Instrument and Procedure

Creswell (2003) defines data collection as a means by which information is obtained from the selected subjects of an investigation. This study used primary data that was collected using a self-administered questionnaire consisting of two different sections: background information of the respondents and organizational innovation. Both close and open questions were used to ensure that detailed information is collected. A self-administered questionnaire was preferred for this study because of its low cost and adequacy of time for respondents to give responses. It is free of researcher biases and a large number of respondents can be reached (Kothari, 2008). The questionnaires were administered to all the respondents during working hours to increase the chance of high response rate.

### 3.7. Reliability

According to Nachimias and Nachmias (1996), reliability refers to consistency of a measuring instrument that is the extent to which a measuring instrument contains variable error. In this study, Cronbach's Alpha was used to test reliability. Cronbach's Alpha value of 0.75 was generated which indicated that the data collection instrument was reliable and acceptable for the purpose of this study (Nunnally, 1978).

### 3.8. Validity

Validity of data collection instrument refers to the degree to which a measuring instrument measures what it is supposed to measure (Nachmias and Nachmias, 1996). The questionnaire was presented to the supervisor for review and amendment. This helped to ensure

that all the questions were addressing the intended variables. The unclear statements or questions were modified to adequately represent the variable being measured.

### 3.9. Data Processing, Analysis and Presentation

The completed questionnaires were edited for completeness and consistency before analyzing. Descriptive and inferential statistics were used to analyze the data gathered for the study. Descriptive statistics were concerned with the development of certain indices from the raw data, whereas inferential statistics was concerned with the process of the estimation of relationship between the study variables (Kothari, 2004). The study inferential analysis included correlation and regression analysis. The correlation analysis showed the relationship between the organizational innovation and Performance. Correlation P value of less than 0.05 was used to show that there is association between the dependent and the independent variables, while P value greater than 0.05 showed that there is no association between the variables.

Regression analysis was done by regressing company performance against organizational innovation namely administrative innovation, technological innovation and marketing innovation. The model showed the percentage variation on the company performance that could be explained by organizational innovation.

The regression model for this study was represented with the following equation:

$$y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Where: y is the company performance

a is the y-intercept

$\beta_1, \beta_2, \beta_3$  are coefficients of variables X1, X2 and X3 respectively

X1 is the administrative innovation

X2 is the technological innovation

X3 is the marketing innovation

e is the error term

The study was based on the assumption that the highlighted independent variables explain the dependent variable.

SPSS was employed as the appropriate tool for the analysis.

## 4. Research Findings and Discussion

### 4.1. Demographic Characteristics of the Respondents

Demographic characteristics that were studied among the respondents included; gender, age, education level and department in which the respondents' worked.

#### 4.1.1. Gender of Respondents

	Frequency	Percent (%)
Male	51	59
Female	36	41
Total	87	100

Table 2: Gender distribution

Results in table 2 shows that 59% of the study respondents were male while 41% were female. This implies that gender balance is relatively observed in the company, although the male dominate.

#### 4.1.2. Age of Respondents

	Frequency	Percentage (%)
<30 years	17	20
30-40 years	42	48
41-50 years	24	27
>50 years	4	5
Total	87	100

Table 3: Age distribution

Results in table 3 shows that 20% of the study participants aged less than 30 years, 48% aged between 30-40 years, 27% aged between 41-50 years while 5% aged above 50 years. This implies that the company's work force is largely young adults, with a total of 68% of the respondents being aged 40 and below.

#### 4.1.3. Education Level of Respondents

	Frequency	Percent (%)
Secondary level	13	15
University level	74	85
Total	87	100

Table 4: Distribution of education levels of respondents

Results in table 4 shows that majority (85%) of the study respondents had university education while 15% had secondary education. This means the study respondents had adequate knowledge to understand the purpose and the methods of the study and hence give relevant and reliable information. It also shows that the company employed educated people capable of implementing its strategies and processes for better performance.

#### 4.2. Respondents Departments

The study further sought to determine the departments in which the respondents were working within the company.

	Frequency	Percent
Human Resource department	7	8
Marketing department	22	25
Corporate Affairs department	39	45
Product development department	19	22
Total	87	100

Table 5: Distribution of working department

Results in table 5 reveal that 8% of the respondents were from human resource department, 25% from marketing, 45% from corporate affairs and 22% from product development team. This means that all the relevant departments that were directly or indirectly involved with innovation in the company were represented in the study.

#### 4.3. Administrative Innovation

Statements	Strongly Agree	Agree	Disagree
Your company has a well-established internal mechanism that ensures equitable distribution of resources among all departments.	31(36%)	39 (45%)	17(19%)
Your company has shortened duration of obtaining a product or service	43(49%)	37(43%)	7(8%)
Your company has adopted a reward system which is linked to performance	47(54%)	37(43%)	3(3%)
Your company has both physical and virtual channels of information and knowledge sharing that are open to all employees	51(59%)	36(41%)	-
Your company has a system of capturing customers' complaints.	76(87%)	11(13%)	-

Table 6: Respondents perception on Administrative Innovation

Results in table 6 reveals that 36% of the respondents strongly agreed with the statement that their company has a well-established internal mechanism that ensure equitable distribution of resources among all departments, 45% only agreed while 19% disagreed with the statement. The table also shows that 49% strongly agreed that their company has shortened duration of obtaining a product or service, 43% only agreed while 8% disagreed. Majority (54%) of the study participants strongly agreed with the statement that their company adopted reward systems which is linked to performance, 43% only agreed while 3% disagreed with the statement. Majority (51%) of the respondents strongly agreed that the company has both physical and virtual channels of information and knowledge sharing that are open to all employees while 41% only agreed. Additionally, 87% strongly agreed that their company has a system of capturing customers' complaints while 13% only agreed

		Administrative Innovation	Company performance
Administrative Innovation	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	87	
Company performance	Pearson Correlation	.512**	1
	Sig. (2-tailed)	.000	
	N	87	87

Table 7: Correlation between Administrative Innovation and company performance

\*\* Correlation is significant at the 0.01 level (2-tailed).

The study sought to determine the relationship between administrative innovation and company performance. Results in table 7 indicates that administrative innovation and company performance had a significant relationship ( $r= 0.512$ ,  $P\text{-value} < 0.01$ ). This indicates that improving administrative innovation in the company would lead to the increased performance. These findings are consistent with Henzef and Matton, 2009; Lilly and Juma, 2014 who reported a positive and significant relationship between administrative innovation and company performance.

#### 4.4. Technological Innovation

Statement	Strongly Agree	Agree	Disagree
Your company is keen to cope with market demands and develop new products faster than the rivals	13(15%)	43(49%)	31(36%)
Your company continuously modifies design of its products and rapidly enters new emerging markets.	27(31%)	49(56%)	11(13%)
Your company has unique services compared to its rivals	13(15%)	64(74%)	10(11%)
Your company offers a wide range of products	26(30%)	38(44%)	23(26%)
Your company focuses on market driven products	33(38%)	54(62%)	-
Your company extends the number of product lines frequently	19(22%)	45(52%)	23(26%)
The extent of new services is developed in your company is satisfactory	26(30%)	61(70%)	-

Table 8: Respondents perception on Technological innovation

Results in table 8 reveals that 15% of the study respondents strongly agree with the statement that their company is keen to cope with market demands and develop new products faster than the rivals, 49% only agreed while 36% disagreed. Majority (56%) of the respondents agreed with the statement that their company continuously modifies design of its products and rapidly enters new emerging markets, 31% strongly agreed while 13% disagreed. Fifteen percent (15%) of the respondents strongly agreed with the statement that their company has unique services compared to its rivals, 74% only agreed while 11% disagreed with the statement. Thirty percent (30%) of the participants strongly agreed with the statement that their company offers a wide range of products, 44% only agreed while 26% disagreed. Thirty-eight percent (38%) of the study respondents strongly agreed with the statement that their company focuses on market driven products, while majority (62%) agreed with the statement. The Table also shows that 22% of the respondents strongly agreed with the statement that their company extends the number of product lines frequently, 52% only agreed while 26% disagreed with the statement. Majority (70%) of the respondents agreed with statement that the extent to which new services are developed in their company is satisfactory while 30% strongly agreed.

		Company Performance	Technological Innovation
Company performance	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	87	
Technological innovation	Pearson Correlation	0.605**	1
	Sig. (2-tailed)	.000	
	N	87	87

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 9: Correlation between Technological Innovation and company performance

Results in table 9 indicates that technological innovation had a significant relationship with and company performance ( $r= 0.605$ ,  $P\text{-value} < 0.01$ ). This indicates that the greater the extent of technological innovation in the company the better the company performs. These findings are consistent with Atalay (2013) who found a positive relationship between technological innovations and company performance.

#### 4.5. Marketing Innovation

Statements	Strongly Agree	Agree	Disagree
Your company has adopted new ways of marketing its products and services	24(28%)	62(72%)	-
Your company uses new ways of distributing products to the market	23(27%)	25(29%)	38(44%)
Your company engage in new ways of product promotion	27(31%)	49(56%)	11(13%)
Your company implements new ways of pricing its products and services	49(56%)	38(44%)	-
Your company has fair prices for its products and services compared to its rivals	73(84%)	14(16%)	
Your company offers high quality product/services at affordable price	24(28%)	53(61%)	10(11%)

Table 10: Respondents perception on marketing innovation



Results in table 10 indicate that 28% of the respondents strongly agreed with the statement that their company has adopted new ways of marketing its products and services while 72% agreed. Forty-four percent (44%) disagreed with the statement that their company uses new ways of distributing products to the markets, 29% only agreed while 27% strongly agreed with the statement. The table also shows that 31% of the respondents strongly agreed with the statement that their company engage in new ways of product promotions, 56% only agreed while 13% disagreed. Majority (56%) of the respondents strongly agreed with the statement that their company implements new ways of pricing its products and services while 44% only agreed with the statement. Majority (84%) of the respondents strongly agreed that their company has fair prices for its products and services compared to its rivals while 16% just agreed. Further, 28% of the respondents strongly agreed that their company offers high quality product/services at affordable price, 61% agreed while 11% disagreed with statement.

		Company Performance	Marketing Innovation
Company performance	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	87	
Marketing innovation	Pearson Correlation	0.541**	1
	Sig. (2-tailed)	.000	
	N	87	87

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 11: Correlation between marketing innovation and company performance

Results in table 11 indicates that marketing innovation had a significant relationship with company performance ( $r = 0.541$ ,  $P$ -value < 0.01). This indicates that improving the extent to which marketing innovation is ensured would lead to better company performance.

#### 4.6. Effect of Organizational Innovation on Company Performance

Statements	Yes %	No %
Do you think that administrative innovation has any effect on performance of mobile telecommunication companies in Rwanda	83 (95%)	4 (5%)
In your opinion does technological innovation influence performance of mobile telecommunication companies in Rwanda	78 (90%)	9 (10%)
Marketing innovation affect performance of mobile telecommunication companies in Rwanda	76(87%)	11(13%)

Table 12: Respondents perception on effect of Organizational innovation on company performance

Results in table 12 indicates that majority (95%) of the respondents felt that administrative innovation has effect on performance of mobile telecommunication companies in Rwanda while 5% felt otherwise. Ninety percent (90%) of the respondents were of the opinion that technological innovation influences performance of mobile telecommunication companies in Rwanda, while 10% felt otherwise. Majority of the respondents (87%) believed that marketing innovation affects performance of mobile telecommunication companies in Rwanda while 13% did not believe so.

Rating	Frequency	Percent (%)
Fair	19	57
Good	66	32
Excellent	2	11
Total	87	100

Table 13: Company's performance in terms of total sales growth in the past three years

Table 13 shows that 57% of the study respondents felt that their company's performance in terms of revenue growth in the past three years was fair, 32% thought performance was good while 11% of the respondents felt that the company's performance was excellent.

	Years		
	2013	2014	2015
Total sales growth	82.6 million	81.5 million	83.0 million

Table 14: Total sales growth for the study period

Table 14 shows that the total sales growth slightly decreased from 82.6 million in 2013 to 81.5 million in 2014, followed by an increase to 83.0 million in 2015. The decrease in sales might be as a result of the decrease in market share experienced by the company in the same study period.

Rating	Frequency	Percent (%)
Fair	11	13
Good	64	74
Excellent	12	13
Total	87	100

Table 15: Company's performance in terms of market share in the past two years

Table 15 indicates that 13% of the study respondents felt that their company's performance in terms of market share in the past three years was fair, 74% believed that the performance was good while 13% of the respondents felt that the performance was excellent.

	Years		
	2013	2014	2015
Market share	53%	49%	47%

Table 16: Market share for the study period

Table 16 indicates that the market share for the company in terms of active subscribers reduced from 53% in 2013 to 47% in 2015. The reduction could be attributed to efforts by other telecommunication companies to attract customers. However, even at 47% MTN remain the company with the largest market share compared to Airtel and Tigo.

	Years		
	2013	2014	2015
ROA	3%	6%	9%
Net profit	3.5 Million	6.1 million	8.9 million

Table 17: ROA and Net profit for the study period

Table 17 indicates that the ROA for the company increased from 3% in 2013 to 9% in 2015. Likewise, the Net profit increased from 3.5 million in 2013 to 8.9% in 2015.

#### 4.7. Regression Analysis

The study sought to determine how much variation in company's performance could be explained by organizational innovation. Table 18 indicates that 71% of the variation in company's performance could be attributed to Administrative Innovation, Technological Innovation and Marketing Innovation together implying that the model is a good fit for the data.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.753 <sup>a</sup>	0.711	0.708	11.63

a. Predictors: (Constant), Administrative innovation, Technological innovation, Marketing innovation

Table 18: Model Summary

From the ANOVA statistics in table 19, statistically, the overall relationship was very significant with significant value, P value = 0.000, (P < 0.01)

Model	Sum of Squares	Df	Mean Square	F	Sig.	
1	Regression	2.254	3	0.751	5.690	0.001 <sup>b</sup>
	Residual	15.843	120	0.132		
	Total	18.097	123			

a. Dependent Variable: Company performance

b. Predictors: (Constant) Administrative innovation, Technological innovation, Marketing innovation

Table 19: ANOVA<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.475	0.177		2.688	0.008
	Administrative innovation	0.130	0.070	0.166	1.861	0.015
	Technological innovation	0.108	0.097	0.096	1.112	0.026
	Marketing innovation	0.184	0.070	0.236	2.615	0.010

a. Dependent Variable: Company performance

Table 20: Coefficients<sup>a</sup>

From the table of coefficients, table 20 indicates that the established regression equation was  $Y = 0.475 + 0.130$  (Administrative innovation) +  $0.108$  (Technological innovation) +  $0.184$  (Marketing innovation). The regression equation revealed that holding Administrative innovation, Technological innovation and Marketing innovation to a constant zero, company performance would be 0.475. The Table shows that all the three independent variable are important factors in enhancing better performance in the company. However, marketing innovation (0.184) has greater effect on the company performance followed by administrative innovation (0.130) and lastly technological innovation (0.108). This implies that embarking on either of the variations would improve company's performance. Ensuring all the three aspects of organizational innovations in the company would result into much better performance.

## 5. Summary, Conclusions and Recommendations

### 5.1. To Determine the Effect of Administrative Innovation on Performance of Mobile Telecommunication Companies in Rwanda

The study findings indicated that 36% of the respondents strongly agreed with the statement that their company has well established internal mechanisms that ensure equitable distribution of resources among departments, 45% only agreed while 19% disagreed with the statement. Majority (49%) strongly agreed that their company has shortened duration of obtaining a product or service, 43% only agreed while 8% disagreed. Majority (54%) of the study participants strongly agreed with the statement that their company adopted reward system, which is linked to performance, 43% only agreed while 3% disagreed with the statement. Majority (51%) of the respondents strongly agreed that their company has both physical and virtual channels for information and knowledge sharing that are open to all employees, while 41% only agreed. Additionally, 87% strongly agreed that their company has a system of capturing customers' complaints while 13% only agreed. The findings also indicated that administrative innovation and company performance had a significant relationship ( $r = 0.512$ ,  $P$ - value  $< 0.01$ ).

### 5.2. To Evaluate the Effect of Technological Innovation on Performance of Mobile Telecommunication Companies in Rwanda

On technical innovation, the study findings showed that 15% of the study respondents strongly agree with the statement that their company is keen to cope with market demands and develop new products quickly than its rivals, 49% only agreed while 36% disagreed. Majority (56%) of the respondents agreed with the statement that their company continuously modifies design of its products and rapidly enters new emerging markets, 31% strongly agreed while 13% disagreed. Fifteen percent (15%) of the respondents strongly agreed with the statement that their company has unique services compared to its rivals, 74% only agreed while 11% disagreed with the statement. Thirty percent (30%) of the participants strongly agreed with the statement that their company offers a wide range of products, 44% only agreed while 26% disagreed. Majority (62%) of the study respondents agreed with the statement that their company focuses on market driven products while 38% strongly agreed. The findings also showed that 22% of the respondents strongly agreed with the statement that their company extends numbers of product lines frequently, 52% only agreed while 26% disagreed with the statement. Majority (70%) of the respondents agreed with statement that the extent to which new services are developed in their company is satisfactory while 30% strongly agreed. Correlation analysis showed that technological innovation had a significant relationship with company performance ( $r = 0.605$ ,  $P$ - value  $< 0.01$ ).

### 5.3. To Assess the Effect of Marketing Innovation on Performance of Mobile Telecommunication Companies in Rwanda

Findings further revealed that 28% of the respondents strongly agreed with the statement that their company has adopted new ways of marketing its products and services while 72% agreed. Forty-four percent (44%) disagreed with the statement that their company uses new ways of distributing products to the markets, 29% only agreed while 27% strongly agreed with the statement. The study shows that 31% of the respondents strongly agreed with the statement that their company engage in new ways of product promotions, 56% only agreed while 13% disagreed. Majority (56%) of the respondents strongly agreed with the statement that their company implements new ways of pricing its products and services while 44% only agreed with the statement. Majority (84%) of the respondents strongly agreed that their company has fair prices for its products and services compared to its rivals while 16% just agreed. Further, 28% of the respondents strongly agreed that their company offers high quality product/services at affordable price, 61% agreed while 11% disagreed with statement. Marketing innovation was found to have a significant relationship with company performance ( $r = 0.541$ ,  $P$ - value  $< 0.01$ ).

The study also showed that majority (95%) of the respondents felt that administrative innovation has an effect on performance of mobile telecommunication companies in Rwanda while 5% felt otherwise. Ninety percent (90%) of the respondents were of the opinion that technological innovation influences performance of mobile telecommunication companies in Rwanda. Majority of the respondents (87%) believed that marketing innovation affects performance of mobile telecommunication companies in Rwanda while 13% did not believe so. Further, 57% of the study respondents felt that their company's performance in terms of revenue growth in the past three years was good, 32% thought performance was very good while 11% of the respondents felt that the company's performance was excellent.

Thirteen percent (13%) of the study respondents felt that their company's performance in terms of market share in the past three years was good, 74% believed that the performance was very good while 13% of the respondents felt that the performance was excellent.

### 5.4. To Establish the Relationship between Organizational Innovation and Performance of Mobile Telecommunication Companies in Rwanda

Regression analysis revealed that 71% of the variation in company's performance could be attributed to Administrative innovation, Technological innovation and Marketing innovation together. The regression equation revealed that holding these variables to a

constant zero, company performance would be 0.475. Further the findings showed that all the three independent variable are important factors in enhancing better performance in the company. However, marketing innovation (0.184) has greater effect on the company performance followed by administrative innovation (0.130) and lastly technological innovation (0.108).

### 5.5. Conclusion

#### 5.5.1. Effect of Administrative Innovation on Performance of Mobile Telecommunication Companies in Rwanda

The study concluded that that administrative innovation is a factor that mobile telecommunication companies in Rwanda could use to improve on their performance. Additionally, the study concluded that administrative innovation has a direct positive impact on company performance.

#### 5.5.2. Effect of Technological Innovation on Performance of Mobile Telecommunication Companies in Rwanda

The study concluded that technological innovation has a significant relationship with company performance. Further the study concluded that performance of mobile telecommunication companies in Rwanda is influenced positively by technological innovation.

#### 5.5.3. Effect of Market Innovation on Performance of Mobile Telecommunication Companies in Rwanda

The study concluded that marketing innovation has a significant relationship with company performance. Investing in marketing innovation would result in increased performance among mobile telecommunication companies in Rwanda.

### 5.6. Recommendations

The study findings indicated that all the study variables have a significant relationship with the company performance. Further, the variables explain a significant variation in the company's performance.

- i. The study recommends that mobile companies and other companies working toward improved performance should consider administrative innovation, technological innovation and marketing innovation as potential strategies for improving performance.

### 5.7. Suggestions for Future Research

The sample in this study was chosen from one Telecommunication Company. Since there are other telecommunication companies in Rwanda, it would be desirable to conduct a similar study that would focus on more than one company.

Further, the study only studied mobile telecommunication companies in Rwanda. There is need to carry out further study on other industries in Rwanda like manufacturing, banking among others and confirm whether the results will be similar. Further study could also be conducted on the factors that affect the performance of mobile telecommunication firms in Rwanda other than organizational innovation.

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