

## Effect of Product and Process Technological Innovation Strategies on Organization Performance in the Telecommunication Industry in Kenya: A Case of Safaricom Kenya

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### ABSTRACT

The accelerating pace of technological innovations has affected many organizations' performance today. Some firms respond defensively, seeing technology as a problem, while others through strategic use of technological innovation strategies gain permanent advantage. This study analyzed the effect of product and process technological innovation strategies on organization performance in the Kenya communication industry. The study adopted ex post facto research design. It used secondary data obtained from company publications, journals, periodicals and internet information. Correlation analysis was also used to establish the relationships that exist between the variables of the study namely innovation and technology management practices and business survival. Analysis of data collected was compared with the theoretical approaches and documentations cited in the literature review. This study contributes to the existing body of scientific knowledge on information systems. Managers responsible for strategy may use the findings to formulate effective monitoring and control systems to mitigate against the challenges while formulating and adopting business strategies. Academics and business researchers will borrow from the findings of this research to support literary citations do further research. First the regression results revealed that there was a positive and significant correlation between product innovation strategy and performance ( $\beta = 0.701, p = 0.000 < 0.05$ ). Multiple regression analysis confirmed an increase in product innovation led to an increase in performance and this was significant. Further results revealed insignificant relationship between process innovation and performance ( $\beta = 0.217, p = 0.061 > 0.05$ ). The study concludes that among the technological innovation strategies included in the study, product innovation strategy had the most influence on performance of Safaricom (K) Limited. From the results the process innovation had no effect on performance of Safaricom (K) Limited.

**Key Words:** organization performance, technological strategies, communication industry

## I. INTRODUCTION

The extent of innovation is typically expressed in the rapid development of new products and technology, although the changes are not limited to tangible items. Organizations are increasingly engaged in innovative management, organizational and business configuration measures that contribute to the realization of long-term competitive advantages (Maier, 2016; Maier, 2017; Popescu, 2016). Product innovation is the ability to deliver a better product than what is currently on the market, in the sense that it has more functionality or performs better (Meeus, 2006). By distinguishing its production and enhancing the quality and diversity of items, the company can achieve a competitive advantage, allowing it to expand demand and open new growth opportunities (Maier, 2013; Vadastreanu, 2015).

According to the National Trends and International Comparisons (NTIC) (2012) survey, global innovations and R&D expenditures totaled an estimated \$1, 276 billion in 2009. In 2009, the United States was by far the top innovator and R&D performer (\$402 billion), accounting for roughly 31% of global total expenditures. However, this was a decrease from 38% in 1999 to 31% in 2009. In many economies around the world, inadequate investment in innovation methods has resulted in negative growth of SMEs in the manufacturing sector. Only 4,098 new agreements to license ideas were filed in the United States (U.S.), and money earned from innovations totaled \$24,452 million. This was significantly lower than the predicted revenue in 2011 (NSF/NCSSES, 2011). According to the South African Innovation Survey (2012), 34.6 percent of firms reported no innovation efforts at all. Non-innovative enterprises accounted for 7,915 firms and employed around 0.27 million people. This demonstrated that innovation has the potential to generate employment (Moseset al., 2012). e. water is a new innovation in Uganda that allows water customers to pay their bills using mobile phones. Within four months of e. water March 2011 introduction, approximately 20,000 National Water and Sewage Corporation (NWSC) account holders had moved to the mobile money option, accounting for 10% of the overall customer base. Moreover USD 300,000 in water bills were paid using mobile money channels, with Kampala accounting for 80% of the total. MTN was the leading operator, accounting for 95% of water service income collected via mobile money channels (Hope et al., 2011).

In Kenya, following the introduction of mobile money transfer services offered by telecommunication players, the registration of microfinance institutions as deposit taking organizations, and the entry of internet money transfer agents, innovation has led to improved organizational performance and increased industry convergence in Kenya's financial industry (Njenga et al., 2015). Financial performance has increased as a result of innovation, particularly in Kenyan banks. Adoption of innovation by commercial banks has a great potential for financial performance improvement, resulting in higher returns for shareholders (Cherotich et al, 2015). The variety of innovation has resulted in higher acceptance among banks and their clients, with the uptake expedited by the fact that adoption is from both banks and their consumers. Banks can

better manage their costs by continuing to invest in digital innovation rather than continuing to invest in bricks and mortar (Njenga et al., 2015).

Safaricom was named the world's ninth most innovative firm in 2013. According to a report titled Global Online Payment Methods, 2014, there were 25 million M-Pesa account holders, with more money moved annually than Kenya's national budget of KES 2 trillion. Online and mobile payments are expected to reach KES300 trillion in the next five years (CBK, 2014; Mutiga, 2014; Saylor & Michael, 2012; Mugo, 2014). M-Pesa users have climbed from 41 percent in 2009 to 67 percent today. Mobile money accounted for 6.59 percent of total national payments. Over two-thirds of Kenya's adult population used mobile money transfer services, with 78 percent using M-Pesa through phone through a network of over 60,000 local agents (CBK, 2014).

Product repositioning, product replacement, and process innovation methods such as regulatory compliance and cost reduction all contributed to banks' increasing profitability (Ngugi, 2013). The Kenyan government introduced the ground-breaking Kenya National Agricultural Insurance Program, which is intended to address the issues that agricultural producers experience when severe output shocks, such as droughts and floods, occur. The initiative intends to strengthen farmers' financial resilience in the face of severe shocks, allowing them to adopt new production practices and break the poverty cycle of low investment and low returns. Even while new items are the obvious consequences of market innovation, process innovation is equally significant in terms of strategy. Process innovation is described as introducing new aspects into an organization's production. The path to achieving company performance necessitates redefining the procedures that underpin its operation as well as boosting the use of innovative technologies. In this sense, process innovation refers to a business process that approaches the use of innovation in an enterprise's critical processes, thereby reducing costs or time to provide a good or service (Maier, 2014).

Therrien et al. (2011) conducted a study on innovation on organization performance in service industry which indicated that in order to gain sales from innovations and organizations need to come to the market early to introduce new products with higher levels of innovation. Gunday et al. (2011) study on marketing, process, product and organization innovations on organization performance such as achievements in finance marketing and production by conducting an empirical study of Turkish firms in different sectors. The research found that marketing, product and organization innovations have positive impacts on organization performance in manufacturing sector.

## II. METHODOLOGY

The study adopted ex post facto since it was the most appropriate research design to use in order to test the hypotheses set in the study. Ex post facto research, by its very design, investigates the world as it naturally occurs and explores phenomena that have already occurred (Johnson & Christensen, 2008). Kerlinger and Lee (2000) note that the credibility of ex post facto research can be improved when designing the study that a number of hypotheses be considered. This is because the greater number of alternative hypotheses investigators can eliminate, the greater likelihood the study can approximate internal validity (Newman, Newman, Brown, & McNeely, 2006). The research used secondary sources of data obtained from company publications, journals, periodicals and internet information. Published data and the data collected in the past or other parties are called secondary data (Donald, 2011). Time series panel data was employed because it helps to study the behavior of the sample firms over time and across space. This time series panel data included the selected aspects of financial distress and performance of the companies over the ten-year period (2006-2017). According to Shaughnessy (2006), contacting everyone in a very large population is practically impossible, and the researcher usually selects a subset of population to represent the population. The researcher purposively chose Safaricom since she owns many assets, have huge profit margins and are listed in the Nairobi securities exchange.

The study used content analysis for data presentation. Mugenda and Mugenda (2003) define content analysis as a technique for making inferences by systematically and objectively identifying specified characteristics of messages and using the same to relate trends. The data was obtained from the company publications, journals, periodicals and internet information. Correlation analysis was also used to establish the relationship that exists between the variables of the study. Analysis of data collected was compared with the theoretical approaches and documentations cited in the literature review. The data collection instrument did not go through the university ethical review process because the review committee was not yet established by the time the study was conducted.

### **Statement on Ethics Review**

This was a desk review of open access data from the subject firm. Therefore, the review did not require ethical clearance.

## III. RESULTS

### **a. The Product and Performance**

Table 1 below shows the model summary of product innovation and performance and the R square (R<sup>2</sup>) was 0.621 which implies that product innovation explained 62.1 % of variation on Safaricom (K) Limited performance.

**Table 1:**  
*Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.801(a)	.621	.499	2.3214

a Predictors: (Constant), Product Innovation

The Analysis of Variance results (Table 1) show that the significance values were  $p = 0.000$  which means that the influence of product innovation on performance was significant.

**Table 2:**  
*Relationship Between Independent Variable and Dependent Variable*

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	394.461	3	131.487	13.212	.000 <sup>(a)</sup>
	Residual	1761.462	177	9.952		
	Total	2155.923	180			

a Predictors: (Constant), Product Innovation

b Dependent Variable: Performance

The regression coefficients show the direction of relationship between the independent and dependent variable. Table 2 shows that a unit increase in product innovation led to a 0.701 unit increase in performance of Safaricom (K) Limited and this was significant ( $p = 0.000$ ).

**Table 3:**  
*Product Innovations Strategy and Organizational Performance*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	21.362	2.411		7.804	.000
	Product innovation	.701	.108	.428	6.267	.000

a Dependent Variable: Performance

The findings showed that Safaricom (K) Limited developed new products with technical specifications. Correlation analysis showed that there was a positive and significant coloration between product innovation strategy and performance. The multiple regression analysis confirmed an increase in product innovation led to an increase in performance and this was significant.

**b. The Process and Performance  
Regression Analysis**

Table 4 shows the model summary of the regression analysis between process innovation and performance of Safaricom (K) Limited. The results indicate that process innovation explained 47.2 % ( $R^2 = .472$ ) of performance at Safaricom (K) Limited.

**Table 4:**  
*Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.545(a)	.472	.510	2.7816

a Predictors: (Constant), Process Innovation

The analysis of variance results indicated that the process innovation influence on performance model was not significant in explaining the influence of process innovation on performance as shown in Table 5.

**Table 5:**  
*Analysis of Variance between Process Innovation Strategy and Organizational Performance*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	890.503	3	296.834	41.520	.051(a)
	Residual	1265.41	177	7.149		
	Total	9	180			
		2155.92	3			

a Predictors: (Constant), Product Innovation

b Dependent Variable: Performance

The simple regression coefficients show that a unit increase in process innovation lead to a 0.217 unit increase in performance at Safaricom (K) Limited but this influence was not significant ( $p = 0.061$ ) as depicted in Table 6.

**Table 6:**  
*Process Innovation Strategy and Organizational Performance*

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	13.117	1.752		7.486	.000
	Product innovation	.217	.084	.288	4.965	.061

#### a Dependent Variable: Performance

The findings indicated that Safaricom (K) Limited adopted advanced real-time process control technology in its operations. The correlations results showed that there was a positive association between process innovation and performance but this was not significant. Regression analysis confirmed that there was a linear relationship between process innovation and performance but this was not significant. These results suggest that process innovation strategy is not a core strategy in Safaricom (K) Limited operations. This finding supported Corrocher and Zirulia (2010) argument that process innovation is specific to certain service industries as it is influenced by customers' heterogeneity which is not true of the mobile sector.

### IV DISCUSSION

The established positive and significant effect of product innovation on performance is supported by Faria and Mendonça (2011); Cozza et al. (2012) who also established that product innovation relates positively to the growth in revenues and profitability. Further in support of this, there are several studies that have found that there is a direct effect of product innovation on organization performance (Szymanski et al. 2007; Bowen et al. 2010; Calantone et al., 2010). Bayus et al. (2003) proved that performance of an organization is positively and significantly linked to the product innovation. Hernandez and Ballester (2009) confirmed a significantly positive impact of product innovation on organization performance. The findings suggested that Safaricom (K) Limited performance is influenced by its reliance on producing products with technical specifications and this give it an edge over its competitors. This finding supports local studies that have shown the importance of product innovation on performance of firms in the mobile industry. Njoroge et al. (2016) study confirmed that technology was important to explain the changes in performance of telecom companies. The study concluded that telecoms companies need to invest more in technology to meet the changes that are needed to improve performance.

### IV. CONCLUSIONS

- i. First the study established a positive and significant effect of product innovation strategy on performance of Telecommunication Industry in Kenya. The study further concludes that among the innovation strategies included in the study, product innovation strategy had the most influence on performance of the Telecommunication Industry in Kenya.
- ii. Process innovation strategy has no significant effect on performance of Telecommunication Industry in Kenya. The study further confirmed that among market innovation and product innovation, process innovation had the least impact on performance of Telecommunication Industry in Kenya.

## V. RECOMMENDATIONS

- i. The company should continuously engage in product innovation to enhance the competitive advantage it possesses against other players in the telecommunications sector. This can be achieved by conducting market research among its users and non-users to identify products that they can introduce into their product catalogue.
- ii. The company should consistently analyze and measure their services operations in an effort to enhance operations efficiency. This can be achieved by keeping up with best practices in the global telecommunication sector and integrating these processes in their operations to maintain their competitive advantage.



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