

# Mobile Technology As a Disruptive Innovation on Shopping Malls Rental Space: Case Study From Kenya

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## Abstract

Mobile technology innovations have given businesses the rich of information access and the wider value chain reach. The case study was carried out at Sarit Centre Malls in Nairobi Kenya. The objectives of the case study included: to investigate how reducing cost of mobile technology affect demand for rental space in shopping malls; to establish how perceived usefulness of mobile technology affect demand for rental space in shopping malls; and to analyse how perceived ease of use of mobile technology affect demand for rental space in shopping malls. This case study adopted descriptive research design focusing on business managers from 126 businesses. A representative sample of 92 respondents was selected. The study also revealed that the usability aspects such as learnability, memorability of operating procedures that enhance human interaction in mobile technology has led to reduced demand for display and exhibition space in malls and over the counter transactions. The case study reveals further that lower information cost in mobile applications, individualised perception of services has led to adoption of mobile transactions as a preferred means of business for previous mall customers. The study recommends that business owners in the physical malls can gain more value proposition if they offer virtual malls that can be accessed via mobile applications. There is also a

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need to integrate suitable mobile technology innovation in business models for competitive advantage.

**Keywords:** Mobile innovations, disruptive innovation real estate, virtual malls, electronic commerce.

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## Introduction

Development of mobile technology has advanced in different part of the world. The cost of operation for businesses continues to rise because of the increase in cost of rental space. As demand increases, the size, and the number of malls in Kenya continue to increase. To achieve provision of services without many limitations, some people are exploring innovative use of mobile technology for business transactions. Mobile technology has continued to offer competitive edge to businesses as they are able offer services at reduced operational cost.

Recent mobile technological innovations, in which new models of phones and those with graphical interfaces also referred to as smart phones are in the market. This has made communication even easier. Initially, it was difficult to send graphical images and videos through the mobile phones, currently, it has become very possible, and this aspect has led to emergence of virtual displays that are coupled with colored graphics and videos on merchandised goods and services. The use of mobile technology in marketing has played an important role in reaching many people. With this level of information people have been able to make purchase choices without visiting the stores/malls, make payment via the same and have goods and services delivered at their convenient locations. The situation implies that technology has made it easier for traders to present their products to the market and customers can make faster purchase decision. It would be expected that the demand for exhibition/display space as well as over the counter transactions in conventional business setup will reduce as mobile technology cut into the business to provide strategic options to businesses.

### *Problem Statement*

Today, mobile technology is allowing for full completion of various business transactions from virtual displays & exhibitions, payment processing and customer feedbacks (Babb & Abdullat, 2012). On the other side of the coin, the rapid increase in the number of malls in the urban areas points to the increasing demand for such conventional space. Driven by need for collection of business in close proximity, people need to feel the atmosphere away from their work places and homes, seeing and comparing items from a display in a departmental stores' shelves proves desirable (Afuah, 2014).

Ostensibly, the views hereof indicate that there is a thin line between pros and cons of rental spaces in malls versus the use of mobile technology platform. These dynamics makes it extremely ambiguous to conclude on the future of the businesses affected by

mobile technology. Based on the concept of disruptive innovation theory, the mobile technology innovations would be expected to overtake and displace businesses operated on rental spaces in malls. However, the disruption of the mobile technology innovation is yet to be appreciated and its potential to displace businesses in malls remains unclear.

The two seem to be pacing along at the same momentum leading to a situation which requires a study to determine whether mobile technology innovations is disruptive and what its effects are on demand for rental spaces (Markides, 2013). This paper sought to bridge this gap by weighing the level of disruptiveness caused by mobile technology innovations exploring the effects it has on rental spaces in shopping malls.

## Literature Review

### *Theoretical Foundations in business innovations.*

Various theories such as disruptive innovation theory and office market dynamics theory offer a theoretical background on effects of innovations and dynamism on business processes. In this section we offer an analysis of these theories in relation to shopping malls.

### Disruptive Innovation Theory

Disruptive innovation is an innovation that creates a new market and value networks that disrupts an existing market and value networks, eventually displacing the established and market leaders (C. M. Christensen, 2006; Yu & Hang, 2010). Additionally, disruptive innovation could be defined as the situation of innovating to address the unsustainable trends of innovation (Dyer, Gregersen, & Christensen, 2013). Mobile technology has become one of the innovations in the current age that has influenced businesses in the world. It has affected every aspect of human life with reduction of cost to increasing the convenience of doing business thus can be characterized as a disruptive innovation for social change (C. M. Christensen, Baumann, Ruggles, & Sadtler, 2006).

To investigate the effects of disruptive innovation, it is imperative to lay down the concepts offered by the theory of disruptive innovation as was projected by Christensen's works. Disruptive innovations constitute products or services and business model which present inferior performance packages when compared to what is valued by the mainstream customers. There follow a shift in the competitive factors, with focus on flexibility, price reduction and convenience leading to dominance of the competitor who introduced the disruptive innovation (Sandström, 2010).

At its early development, the perspectives of disruptive innovation were said to serve niche segment. The innovations as well as the established offering then improve with disruptive innovation gradually taking over and satisfying the mainstream customers, finally replacing the incumbent by exceeding performance

Disruptive innovation is divided into low end and new market disruptions. Low end disruption targets the already over-served and low profit-customers at the low end of the original value network while new market disruptions creates a new value network or expand the market to new customers (Govindarajan & Kopalle, 2006). Christensen and

Raynor infers that disruptive innovation does not only facilitate an entrant business to displace the incumbent industry players but can also enlarge the existing industry in the sense that new customers can be attracted by the innovation (C. Christensen & Raynor, 2013). Disruption also can significantly change the habits and behaviours of the customers.

Literature on disruptive innovation has over time tended to focus on business model concept as an important factor that supplements the theory. As such several scholars have attempted to incorporate disruptive services as well as business models. These represent innovations that are not technological but which possess the traits of disruptive technologies (Mothe & Uyen Nguyen Thi, 2010). However this idea was nuanced by (Markides, 2013) who argued that business model innovation was a different phenomenon compared to what Christensen intended (Christensen, 1997). Nevertheless, Christensen (2006), provided an additional argument that qualified business model into the disruptive innovation by stating that disruptive technologies are about business model problem rather than technology problem. This additional argument saw Christensen adopt the term innovation instead of technology used in his previous works (C. M. Christensen, 2006).

Tellis criticized the theory on the ground that it cannot be used to make ex-ante predictions (Tellis, 2006). Tellis viewed that disruptive innovation as a theory is unable to predict whether a new product or a business model will be disruptive in the future. The view was based on the argument that disruptive innovation was developed through retrospective analysis of corporate historic case studies. This, ostensibly, appeared convincing because Christensen developed his argument and concepts of disruptive innovation from corporate occurrences of the past.

Scholars like (Danneels, 2004) posit that it is possible that some organizations are just lucky in their technology choice and after success their technologies are studied retrospectively as disruptive innovations. In response to the criticisms of the theory's inability to make ex-ante predictions, Christensen (2006), argued successfully, providing examples of incumbent organizations that detected disruptive threat and took remedial measures to protect against the threat. Hydrogen fuel cell cars were predicted to be disruptive innovation threat in automotive industry (Sandström, 2010). With such an example, it is observable that numerous scholars have used disruptive innovation theory to make ex-ante predictions and thus, the assertion that it cannot make prediction is wrong and overstated.

Several other scholars have contributed to disruptive innovation theory by addressing various dynamics and even developing ways in which the disruptiveness of an innovation can be measured (Govindarajan & Koppale, 2006). Christensen (1997) explains disruption pattern by looking at customers segments insinuating that disruption happens in low-end and new market before invading the mainstream market. More, (Sandström, 2010) on the other hand draws from diffusion theories that suggest that innovation infiltrates a market in an S-shaped epidemic pattern. As such few innovations reach the mass market while others rarely develop into disruptive innovations. Elsewhere, disruptive innovation can be forecasted and several differentiating market strategies can lead to disruption when differentiated products overwhelm the market (Linton, 2002). It is therefore, observable

that improvements and extensions have been made to inform the concept of disruptive innovation theory as it is known today.

At the basic level, most scholars consent that the business model concept concerns the approaches by which businesses create values for their customers. According to McGrath business model innovation has at its core the elements of customer value proposition for specific market segment achieved by configuring the value network which creates and deliver customer value (McGrath, 2010). Thus, a new business model can be established by the systematic reinvention across customer value, specific customer segment and value network by changing radically the established value proposition, deconstructing the traditional value network and redefining the existing customer segment (Govindarajan & Kopalle, 2006). Based on these views, a business model is thus, a system of activities that are interdependent, and which go beyond business boundaries.

### **Transaction cost economics theory**

Transaction cost economics theory examines the opportunism of the innovator – determines whether a business will integrate vertically and avoid being taken over or specialize in a number of competencies and join alliances to access other capabilities (Williamson, 1985). In addition to customer value, specific customer segment and value network, strategy is also an element that characterise business model. Accordingly, strategy is concerned with how a business sustain competitive advantage supplementing the role of business model of identifying components and their relationships that create and capture value (Teece, 2010). Lastly, the revenue model is also a business model component that deals with the ways to determine the firm's pricing strategy, cost structure as well as margin (Zott & Amit, 2010).

According to McGrath (2010), the customer value innovation as well as the business model cannot be anticipated and the disruptive innovation is path dependent. Therefore disruptive innovation originates remotely in incumbents cognition and once the market unfolds, the disruptive business penetrates through the market by way of adapting the internal and external forces, profitable market segment retention, successful products, adapting routines, processes and values that discourage those who are against its current business model (Christensen, 2006). In other words, the new business model is perceived as the disruptive innovation which displaces the conventional business models. Christensen (2006) adds that when the entrant business grows via a dissimilar path (from the conventional), the entwined incentive, capabilities and incentive model in the niche market disrupts the mainstream market, revenue model is activated and the entrant, thus, gains advantage. McGrath (2010), however, observes that the incumbent can isolate potential disruptive business model innovation even in a niche market in situation where the conditions in the industry inhibit incentives or if the incumbents can leverage the prior capabilities.

### **Theories in Office Market Dynamics**

Office Market Dynamics theory indicates that the main forces in demand for rental space are supply and market conditions such as lease term, vacancy rate and rental rate (Clapp, 1993). The theory demonstrates how the demand supply equilibrium is

influenced and ways that the market has continued to respond to either increased or lowered demand for rental space. Wheaton and Torto indicates that demand for rental space is proportional to the bargaining power of the landlords and tenants (Wheaton & Torto, 1990). Rental rates of retail units has positive relationship with the unit customer generating power and the mall size (Tay, Lau, & Leung, 1999).

In many parts of the World, the rental spaces are diminishing as many business owners and traders continue to start business. The growing population in the Nairobi and the capitalistic economic system. The result of the competition has led to scramble for available spaces as many people want them. In addition, the political climate of Kenya has promoted the establishment of businesses in Nairobi and therefore, many people compete to secure spaces for their business. The end effect of the competition for space has been the increase in rent. For small businesses, it becomes difficult to enter the market since they have not established customers who can purchase products easily to facilitate high income generation (Novogratz, 2010). Good rental spaces that are spacious and offer other benefits like ease of accessibility, availability of parking, and security charge high cost to rent. It implies that not many people can access these places.. The mobile technology is an innovation that has influenced the re-entry of small businesses in the market and therefore, they can compete favourably for customers with large operators. Disruptive innovations intercept the planned projection to achieve certain ends so that it facilitates faster achievement of goals (Babb & Abdullat, 2012). The mobile technology has played an important role in changing the projectile of business development operated on rental space within malls.

#### *Empirical review on disruptive innovations and space demands*

Many countries in Africa have not been able to implement much of mobile technology in their businesses (Oyelaran-Oyeyinka & Adeya, 2004). However, some positives aspects of the same are evident. The many businesses have used the basic technology like SMS and internet to perform common duties. Africa suffers from limited necessary tools for implementation of the technological innovation. Other challenges could be the problems of lack of knowledge in the technology since many countries have low literacy levels. In Africa, Kenya is one of the most advanced countries in which mobile technology in banking is in wide usage (Mas & Radcliffe, 2010). The technology has disrupted the banking and money markets. Banks in Kenya are competing for similar customers. Many of them have lost potential customers because of their potential inconveniences associated with them. To gain customers in the market, some banks have had to implement the creative destruction in the process of service delivery. In the process, many banks have introduced mobile banking and internet banking to ensure that customers find them convenient service providers. The process has helped many banks to win many customers. As a way of enhancing convenience, some banks facilitate opening of accounts over the phone. The accounts linked to mobile phone numbers make access to money easy any time of the day.

The implication of the innovation in mobile technology is the reduction of the demand for rental spaces in the country. Building large malls that cost too much for small business operators therefore is under the threat of reduced demand for the spaces it has. Mobile

technological innovations have affected the development of display and exhibition centres by simplifying the accessibility of information about commodities.

### *Conceptual framework formulation*

To study the constructs of the case, a conceptual framework was developed.

#### Reducing Cost of Mobile Technology

Reduced cost of mobile technology has increased the level of adoption of mobile technology by business, suppliers and customers. It is anticipated that changing attitude towards the costs of such setup, aligned to business goals and objectives of the business will play a key role in getting many businesses to incline towards an integrated mobile technology setup for competitive advantage (Thain & Skey, 2015). This customer mind-set shift is likely to affect the demand for rental spaces. This is anticipated to have an impact on demand for display and exhibition space in malls, as a result of adoption of more affordable platform, the need for over the counter transaction is expected to reduce.

#### Perceived Usefulness of Mobile

Confidence levels and bigger acceptance on the use of mobile applications has been growing remarkably, well noted is the convenience that both business owners and customers have gained from mobile integration. Mobile phone is not only perceived as convenient but also its great accessibility, reduced transaction turnaround time, secure processes and global coverage This inclination towards mobile based transactions by businesses and customers points to an anticipated affect on over the counter retail sales that has direct impact on retail rental space. This is likely to impact the need for over the counter transactions and display space.

#### Perceived Ease of Use of Mobile Technology

Mobile phones platforms usability is a key feature that influence its usage and adoption. This can be looked through its simplicity in design – both literate and illiterate in communities can easily operate a mobile phone. The flexibility in terms of phone functionality has made it consistent with existing user expectations. This aspect has seen mobile phone penetrate every corners of Kenya with 32.2 million subscriptions representing 78% penetration rates (Oteri, Kibet, & Ndung'u Edward, 2015) .

Below is a conceptual framework incorporating the study variables and their operationalization.

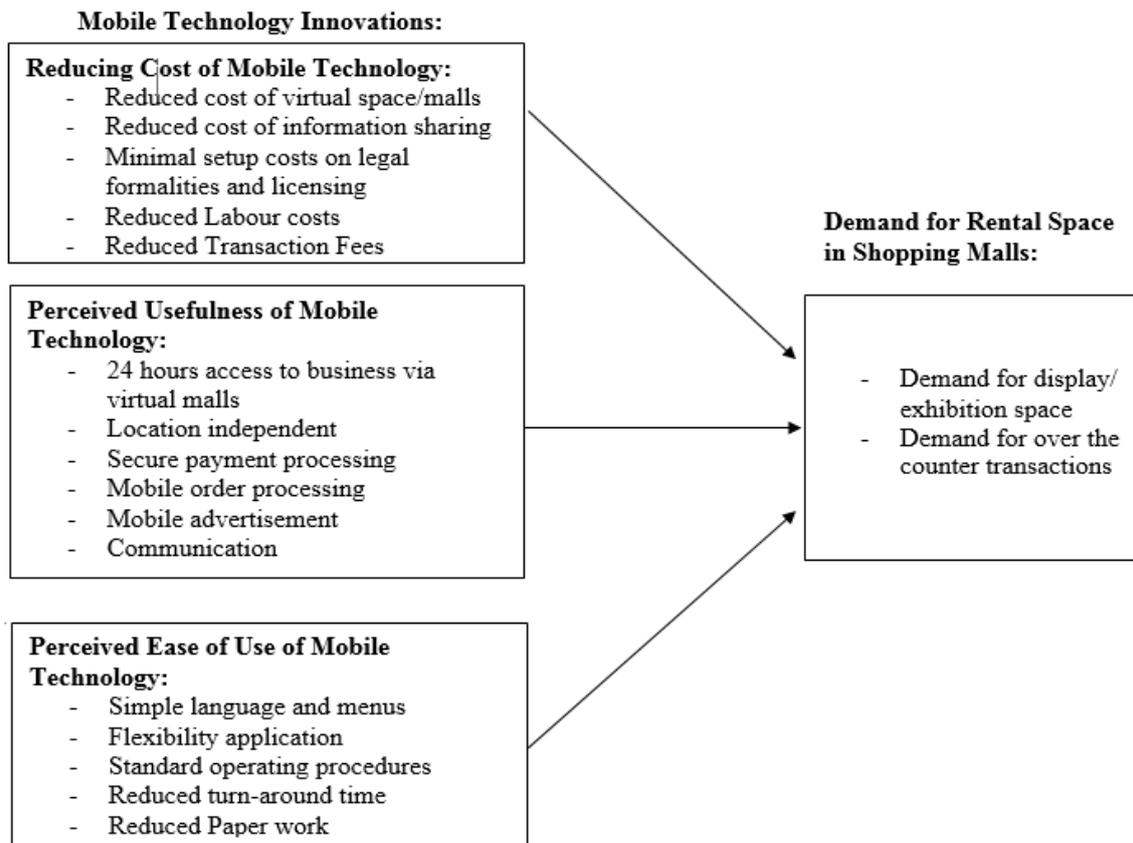


Figure 1: Conceptual Framework on case study variables.

## Methodology

The research design was mixed method that integrates both the qualitative and quantitative designs, this alienate the case scenario of mobile technology innovation and its effect on demand for rental space from a particular to a generalized perspective.

The study was conducted in Sarit Centre, a shopping mall located in Westland neighbourhood in Nairobi County, Kenya . The Sarit Centre is one of the largest shopping malls in East Africa, and was the first enclosed shopping mall in the country when it opened in 1983 (Centre, 2016). It houses over 500,000 square feet of space occupied by a diversity of businesses. Sarit Centre is an interactive shopping mall that offers access to a range of supermarkets, stores, entertainment, service outlets, books and stationery, banks, flowers and gifts, electronic and accessories, fashion and apparel, footwear and luggage, jewellery and accessories, cosmetic and beauty, home appliances, professionals as well as health facilities.

Business managers/owners in the 126 businesses were target population by this study. They were in a better position to reflect on the changes that have been taking place over time and how the mobile technology innovations had impacted the demand for rental space.

The sample size was obtained using Cochran's sample size formula, as explained in equation below. The formula work with an estimated population of 126 business managers and with a precision of +/-10%. Using the Cochran's sample size formula as shown;

$$\text{Cochran's sample size formula; } n_0 = \frac{z^2 pq}{e^2}$$

Where **z** is the desired confidence level the area under the curve, **p** is the estimated proportion of the attribute in the population, **q** is the 1-p and **e** is the desired level of precision. In the research, the desired confidence level was 95%, the estimated proportion of the attitude was 0.5. The desired level of precision in the research was 10%.

$$Z=1.96$$

$$n_0 = \frac{(1.96)^2 * (0.5 \times 0.5)}{(0.1)^2} = 92$$

Therefore, for a population of 126, the required sample size is 92. The sample size of 92 respondents were selected using systematic random sampling from the list of business ventures listed at the mall. To ensure validity and reliability of the data collection instrument a pilot study was conducted first.

Regression was used to determine the relationship between the dependent variables and the independent variables. As a result Regression analysis was used to link the three categories of independent variables with the demand for rental space.

$$y = \beta_i \sum_{i=0}^3 X_i + \varepsilon$$

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \varepsilon$$

y= Demand for rental spaces,

$\beta_i$ =Coefficient of regression i=0, 1, 2, 3

$X_i$  = Mobile Technology Innovations Variable Indicators

$X_1$ = Reducing Cost of Mobile Technology;

$X_2$ = Perceived Usefulness of Mobile Technology;

$X_3$ = Perceived Ease of Use of Mobile Technology

To ensure reliability of the results, Q-Q plot was carried out on the collected data sets: The Q-Q plot is a graphical tool used to help assess if a set of data possibly came from some theoretical distribution such as a normal or exponential. For example, if we run a statistical analysis that assumes that dependent variable is normally distributed, we

can use a Normal Q-Q plot to check that assumption. It's just a visual check, not an airtight proof, so it is somewhat subjective. It allows to see at-a-glance if assumption is credible and if not, how the assumption is violated and what data points contribute to the violation.

### **Data Analysis and Research Findings**

A total of 92 questionnaires were distributed out of which 67 questionnaires were return giving a response rate of 73%. This response was considerable and representative of the population. This response was good enough and representative of the population and conforms to Mugenda and Mugenda stipulation that a response rate of 70% and above is acceptable representation of the population (Mugenda, 1999). In the mall 12% of the businesses were finance and banking, 13% were entertainment, 6% were health/medical, 31% were retail/wholesale, 10% were clothes and fashion, 6% were beauty and cosmetic, 7% were hotel and leisure, 9% were books and education and 4% were other business. This shows that the mall had a variety of businesses thus they provide relevant and reliable information on the mobile technology innovations they used.

Majority i.e 82% of the respondents were the owners of the companies, 15% were managers and 3% were others who included business analyst and demand forecast. This shows that owners and managers were conversant with the mobile technology innovations they use in their day to day activities thus provided reliable information. for the study. The business owners are also likely to give a true account on how the business has transformed due to luck or integration of mobile technology innovations in their operations.

The duration of business experience was studied. 3% of the respondents indicated that they have been in business for a period of less than one year, 5% for a period between 1-5 years, 12% for a period of 5-10 years and 80% for over 10 years. This shows that the businesses had been in operation for a longer period thus have clear understanding on the effects of mobile technology innovations on demand for rental space in shopping malls.

The study sought to assess if the set of data possibly came from some theoretical normal distribution for the variables reducing cost and perceive usefulness.

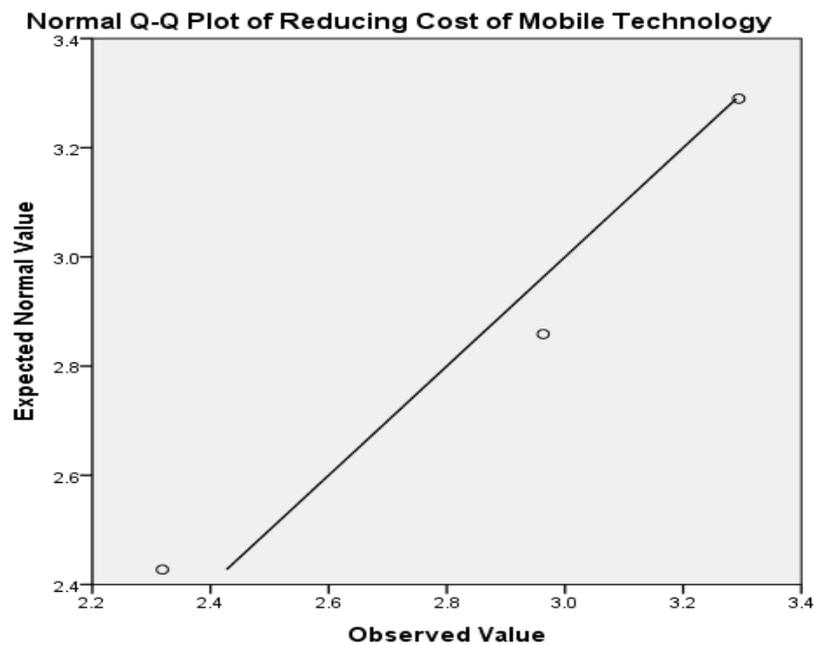


Figure 2: Q-Q Plot for Reducing Cost of Mobile Technology

From the findings on Figure 2. shows that the plots lies in a straight line. Because the circles are consistently below the line, then above it, then below it, the skewing is to the right.

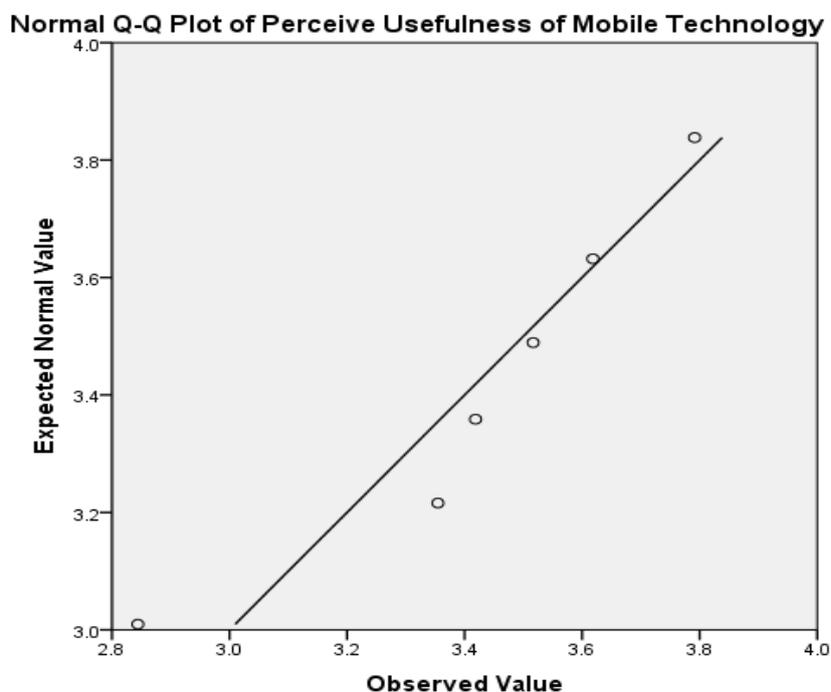


Figure 3 : Q-Q Plot of Perceive Usefulness of Mobile Technology

These stages of conducting normality explored include visualizing shape, detection of centrality and verifying normality of distribution of research data. All the graphs passed the normal tests. Therefore, the study concludes that to a large extent, data was fairly normal.

Regression analysis was conducted to determine how reducing cost of mobile technology, perceive usefulness of mobile technology and perceived ease of use of mobile technology relates to the demand for rental spaces.

Table 1: Regression Model output

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.327	0.107	0.102	0.501

Table 1 shows a model summary of regression analysis between three independent variables reducing cost of mobile technology, perceive usefulness of mobile technology and perceived ease of use of mobile technology and dependent variable the demand for rental spaces. The value of R was 0.327; the value of R square was 0.107 and the value of adjusted R square was 0.102. From the findings, 10.7% of changes in the demand for rental spaces were attributed to the three independent variables in the study. Positivity and significance of all values of R shows that model summary is significant and therefore gives a logical support to the study model.

Table 2 Analysis of Variance output

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	11.3	3	3.767	2.516	0.0367 <sup>b</sup>
Residual	94.35	63	1.497		
Total	105.65	66			

Analysis of Variance statistics of the processed data at 5% level of significance shows that the value of calculated F is 2.516 and the value of F critical at 5% level of significance was 1.96 Since F calculated is greater than the F critical ( $2.516 > 1.96$ ), this shows that the overall model was significant.

Table 3 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.169	4.519		0.701	0.046
Reducing Cost	0.580	0.474	0.872	1.225	0.045
Perceive Usefulness	0.103	0.771	0.081	0.133	0.006
Perceived Ease of Use	0.802	1.802	0.360	0.445	0.000

From the regression findings, the substitution of the equation:

$$Y=3.169+0.580+0.103+0.802$$

Where Y is the demand for rental spaces,  $X_1$  is reducing cost of mobile technology,  $X_2$  is perceive usefulness of mobile technology and  $X_3$  is the perceived ease of use mobile technology.

From the findings of the regression analysis if all factors (reducing cost of mobile technology, perceive usefulness of mobile technology and perceived ease of use of mobile technology) were held constant, demand for rental spaces of the companies would be at 3.169.

The data findings analysed also shows that taking all other independent variables at zero, a unit increase in reducing cost would lead to an increase in the demand for rental spaces by 0.580. An increase in the perceive usefulness would lead to an increase in the demand for rental spaces by 0.103. An increase in the perceived ease of use would lead to an increase in the demand for rental spaces by 0.802.

At 5% level of significance and 95% level of confidence, reducing cost had a 0.045 level of significance, perceive usefulness had a 0.006 level of significance, and perceived ease of use showed a 0.000 level of significant hence the most significant factor is perceived ease of use.

### **Recommendations**

The results indicated that mobile innovations offers significant influence on the market dynamics of the shopping mall business profitability and survival. Business owner need to leverage on value added mobile applications which have minimal operational costs, learnbility and secure to have seamless reach to markets with information rich.

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