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MOBILE PHONE SERVICES AND THEIR PERCEIVED INFLUENCE ON PERFORMANCE OF MANUFACTURING FIRMS: A Case Study of Thika Town in Kenya

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ABSTRACT

The purpose of this study was to investigate the effect of mobile phone services on performance of manufacturing firms. The study was carried out in Thika town in Kenya. It adopted an exploratory design where a two-stage, Stratified and Simple random sampling, technique was employed. A total of 120 questionnaires were personally administered- yielding a response rate of 100%. Data was subjected to detailed exploratory analysis through descriptive procedures. Reliability and internal consistency of the measurement models was tested using Cronbach's alpha. Results of the study revealed that use of Mobile phone services had significantly increased sales volume, Profit, worker productivity, and Customer satisfaction ratings. Majority of the respondents felt that usage of Mobile phone services was critical to the long-term success of firms.

Keywords: *Innovation, Mobile Phone Service, Manufacturing firm, Performance, usage, ICT.*

1.0: INTRODUCTION

1.1 *Background*

During the last few decades the phenomenon of entrepreneurship has gained unprecedented importance on a world wide scale due to being regarded as a sustainable source of new employment, innovation and economic growth (Morales, Gualdron and Roig, 2005).Entrepreneurship and innovation are of fundamental importance to our economy as they spur economic growth and wealth creation (Barringer and Ireland, 2008).According to the World Bank (2006), "firms that use ICT grow faster, invest more, and are more productive and profitable than those that do not" .The wireless industry is one of the most dynamic and growing industry in the world economy today.

There is a shift from the 'sit and search' internet to 'roam and receive' Mobile environment. In Kenya the uptake of mobile phones has been unprecedented with 80% of Kenyan population now covered by Mobile networks. Kenya has seen a tremendous increase in the number of telephone subscriptions, from a Mobile subscription of: 23000 in 1995, 1187100 in 2002 which is 78.7%, 11,440,199 in 2007 which amount to 97.7% of total telephone subscriptions respectively.Mobile Phone services have enhanced the value of a product or service in such a tremendous way. In general 'mobile' means "fully portable, real-time

access to the same information, resources, and tools that, until recently, were available only from the desktop" (Shanker, O'Driscoll, and Reibstein, 2003).

Manufacturing Industry owes high pressure due to technological and competitive changes (Carlos et al., 2008). Strategies for enhancing competitiveness in manufacturing firms have become the need of the hour (Rao & Soumya, 2007). The manufacturing sector in Kenya contributes around 13% to GDP and this has remained largely unchanged since 1995 (Kenya Association of manufacturers, 2006).It is therefore a very critical sector in this error of economic recovery and transforming Kenya into an industrialized nation in the year 2030. Rising levels of competition globally are providing challenges for not only firms in manufacturing industry but in almost all industries. Entrepreneur's greatest challenge is to seek higher levels of productivity and product or service differentiation to respond to competitors worldwide.

Technology and its effective use in organizations has received much attention in the literature, firms have continued to invest large amounts of resources in mobile phone services hoping that good returns will be realised (Weil, 1992). A number of studies on the application of mobile phone services in firm operations has been published (Matskin and Tveit, 2001; Lee 2001).A few of these studies found no relationship between ICT services and firm performance. However quite a number of studies revealed that there is a strong positive relationship between use of mobile phone services and firm performance. Contradictory findings have therefore emerged from these studies. A clear picture of the relationship between ICT investment and firm performance had not emerged from previous studies. Limited and contradictory findings have resulted from inconsistent definitions of ICT, different units of analysis, different-measures of Performance, limited theory base and reliance on cross-sectional methods.Although there is a general notion in which mobile technologies can be applied in business, very little had been done in exploring the contribution of Mobile Phone services in enhancing firm performance.

It is not exactly known to what extent Mobile Phone Services contributed to firm performance.This necessitated further research and the fact that more work on the same had been done outside Kenya constituted the need to study the Kenyan situation to see which side of the debate Kenyan results would fall. This study therefore sought to investigate the application of mobile phone services on firm operations in Thika Town.

2.0 LITERATURE REVIEW

2.1 *Introduction*

Systematic review of literature was undertaken in four phases: The Disruptive Innovation Model, ICT and firm performance, Mobile phone and Mobile phone services and Conceptual framework.

2.2. *The Disruptive Innovation Model*

A review of the literature on innovation and diffusion revealed that there were several distinct schools of thoughts as to what an innovation is. Barnett and Schumpeter define innovation as the carrying out of new combinations. The concept of innovation is an essential component of commercial entrepreneurship. Innovation can therefore be defined as all the scientific, technological, organizational, financial, and commercial activities necessary to create, implement, and market new or improved products or processes (OECD, 1999). The constant changing conditions of the international market forces brings about stiff competition among firms which means that to survive firms must innovate or else they perish as depicted in the business life cycle (fig2.2). Innovative activity has become the key driver of growth and it is evident that countries that create and adopt new technologies which generate innovation grow faster than those that do not.

A number of studies have addressed a good of questions, such as why firms should innovate, what forces drive innovation, and which factors hinder it. Schumpeter, who is one

of the most original expounders of innovation analysis, made one of the most important contributions by introducing the concept of dis-equilibrium into economic discourse. In order to survive, firms must adopt disruptive approaches so as to take advantage of competitor weaknesses and blind spots, and create differentiated, defensible growth strategies.

Disruptive innovations offer 'good enough' performance and new benefits like simplicity, convenience or low prices. They appeal to customers or ‘potential customers who may be looking for something different. The potential of disruptive innovation includes: Making the ugly attractive to overshot customers who don't value or use all of the benefits of existing products, providing cheaper, simpler or more convenient solutions, Scratching the unscratched itch by providing solutions and seizing new ways of doing things so as to make it easier and simpler to get business operations done, increase customer satisfaction, offer simple solutions that break bottlenecks, meet the tastes and preferences of customers and stay ahead of competition.

The characteristics of disruptive innovations include: continuous product or service differentiation, continued improvements of business processes and operations, coming up with new products or services that are simple, and enhance customer satisfaction. There is need to create situations where disruptive innovation is seen as an opportunity, not a threat. Iinnovation creates new features and provides significant competitive advantage.

2.3. *Information Communication Technology (ICT)*

The relationship between ICT and productivity has long been debated over the past three decades. In the 1980s and in the early 1990s, empirical research generally did not find relevant productivity improvements associated with ICT investments (Strassmann, 1990; Bender, 1986; Franke, 1987; Roach, 1989). More recently, as new data were made available and new methodologies were applied, empirical investigations have found evidence that ICT is associated with improvements in productivity, in intermediate measures and in economic growth (Oliner and Sichel, 1994; Lehr-Licthemberg, 1999; Sichel, 1997; Brynjolfsson and Hitt, 1996).It is argued that the diffusion of ICTs is changing the way companies compete, their business models, and their value-adding processes.

However, "the real challenge is not technology (adoption) per se, but the ability to adapt to take advantage of its emerging functionality" (McKenny, 1995).

Since 1995 the acceleration in the growth rate of output and labour productivity can be traced to the advances in Information and Communication Technology. In the manufacturing sector, where IT is often not the task technology, the increase has been even more pronounced, growing from 1.6% in 1970 to 10.6% in 1988 (Roach 1989).

Economies at all levels are being transformed by the rapid development, adoption, and use of ICT innovations. In this respect, ICT functions as a new generic general purpose technology, which impacts these economies both broadly and deeply by generating a wide array of new products, production processes and services (Brynjolfsson & Kahin, 2000). Carlsson (2003) takes this idea one step further arguing that ICT, which involve among other things a combination of digitalisation and the Internet, seem to have broader applicability than previous general-purpose technologies. ICT is routinely deployed in organisations to re-engineer processes, gain new strategic advantages, or network across organisational boundaries, they change both the internal organisation of companies and other organisations and the relationships between companies and organisations (OECD, 2002). The adoption of ICT allows for a reduction of transaction costs and leads possibly to more efficient markets. However there is lack of empirical evidence about the relationship between investments in and use of ICT and productivity and output growth outside the U.S., mainly due to lack of internationally comparable estimates of investments in and use of ICT capital at this level (van Ark, 2002; Devaraj & Kohli, 2000, 2004).

Much clearer and stronger evidence of the impacts of ICT comes from evidence at the firm level (Bryjolfsson & Hitt, 1996; Baily & Solow, 2001; Brynjolfson, Hitt & Yang, 2002; Bresnahan, Brynjolfson & Hitt, 2002; COM, 2003; OECD, 2003; Kohli & Devaraj, 2003).

The introduction of ICT improves the access to information within firms, thus enabling more effective and more rapid decision-making by employees and managers (OECD, 2003). Flexibility has been enhanced by self-managed teams, multi-tasking, just-in-time production, total-quality management, as well as decentralised decision-making (Aubert, Caroli & Roger, 2006). A number of studies show that ICT and changes of the internal organisation of firms have significant positive effects on labour productivity (Brynjolfsson & Hitt, 2000; Bresnahan, Brynjolfsson & Hitt, 2002). In particular, it seems as if it is through their role as coordination technologies that ICT have a special impact on total factor productivity at the firm level (Brynjolfson & Hitt, 2000; Brynjolfson, Hitt & Yang, 2002; Dedrick, Gurbaxani & Kraemer, 2003).

2.4 *Mobile Phone Services*

Mobile phone is an important ICT tool for development due to its ability to easily leapfrog the infrastructure barriers in remote and rural areas in Africa. In general 'mobile' means "fully portable, real-time access to the same information, resources, and tools that, until recently, were available only from the desktop" (Shanker, O'Driscoll, and Reibstein, 2003).The rapid advancement in technologies and ease of use, coupled with the falling prices of devices, present the mobile phone as an appropriate and adaptable tool to bridge the digital divide.Cell phones have not yet achieved these levels of quality, but they do offer "anywhere" convenience, a disruptive innovation advantage.

The wireless industry is one of the most dynamic and growing industry in the world economy today. The rapid technological advancement that the world has witnessed in the recent years especially in the electronic industry has also changed the means of production around the world (Bwisa, 2010). This can be evidenced in the telecommunication sector where, since the introduction and evolution of the mobile phones, the ways and means of business information transfer have changed leading to more efficiency and productivity in both service and manufacturing sectors.

Greengard (2000) estimated that usage of mobile services will be one billion worldwide by 2003. Further, more than nine in ten (95per cent) medium-sized businesses are now connected to the Internet (Dearne, 2001). Mobile phones have an especially dramatic effect in developing countries – substituting for scarce fixed connections(Waverman et al., 2005).In Kenya Key mobile services include mobile calls, mobile instant messaging, M-pesa[1] remittances, Mobile bills payments; Mobile internet browsing and lately banking services e.g. M-kesho[2] . Mobile services are strategic weapons for enhancing business performance. Several previous researches have explored such opportunities (Gressgard and Stensaker, 2006; Smith, 2006; Andreou et al, 2005; Buellingen and Woerter, 2004; Mathew et al, 2004). Pangani (2004) mentions mobility, availability (anytime, anyplace), and personalization as important benefits of mobile services.

2.5 *Performance*

Although the importance of the performance concept and its broader notion of organizational effectiveness is widely recognized (Campbell,1977; Connolly, Conlon & Deutsch,1980; Goodman&Pennings,1977; Hannan,Freeman&Meyer,1976; Klrchoff,1977; Steers,1975;1977; Yuchtman&Seashore,1967), measurement of performance in research settings is one of the thorniest of issues confronting researchers today. Performance measures can be grouped into two basic types: those that relate to results (outputs or outcomes such as competitiveness or financial performance) and those that focus on the determinants of the results (inputs such as quality, flexibility, resource utilization, and

[1] Mobile phone money transaction
[2] Mobile banking/saving service

innovation). This suggests that performance measurement frameworks can be built around the concepts of results and determinants. There are three common approaches of firm performance:

i. Financial Performance Approach
ii. Operational Performance(Non Financial) Approach
iii. Combination of Financial and Operational performance Approach

In this study a combination of Financial and Operational performance approach were engaged for better results.The study sought to establish that performance is a function of mobile phone services and to investigate the application of these mobile phone services on firm operations

2.6. *Critique of existing Literature*

A clear picture of the relationship between mobile services and firm performance has not emerged from previous studies. Limited and contradictory findings have resulted from inconsistent definitions of ICT, different units of analysis, different-measures of Performance, limited theory base and reliance on cross-sectional methods. The existing body of knowledge is not sufficient enough to explain how Mobile phone Call influences firm performance.

3.0 METHODOLOGY

3.1 *Research Design*

This study adopted exploratory research design to investigate the effect of Mobile Phone services on performance of manufacturing firms. To investigate this relationship quantitative research approach was employed. Accurate, valid and reliable conclusions were drawn by engaging descriptive analysis. The effect of mobile services on performance can only be tracked over a set period of time: 2, 3, 4, 6 years and above (Weill, 1992; Gretton, Gali & Parham 2002)).

To ensure a more complete approach to empirical research, longitudinal data were collected in a sequence so as to track the magnitude of change that would have taken place.In this study three years historical data on influence of Mobile Phone call on120 manufacturing firms was examined. The choice of longitudinal approach lies in the greater detail and precision of information. Use of the questionnaire was backed up by field observation which, though limited, revealed some information and data that gave a bearing on the effect of mobile phone services on firm performance. The main focus of the study was the quantitative part of the research exploring relationships between dependent (performance) and independent variable (Mobile phone services).

3.2 *Population*

The target population comprised of all Small, Medium and Large manufacturing firms in Thika Town that had been in operation for at least three years.

3.3 *Sampling Frame*

In this study the sampling frame was drawn from Thika Municipal Council Business Register dated 27thJanuary, 2011 with a total of approximately 200 manufacturing firms.

3.4 *Sampling Techniques*

In this study the statistics formula for determining the sample size and procedures for categorizing data (Cochran, 1977) below was adopted to calculate a representative sample.

$e=Z\alpha\sqrt{\frac{pq}{n}}$ Where α=0.05 and Z α=1.96.

Using the standard values and formula provided above a sample of at least 118 manufacturing firms would be representative. In this study a representative sample of 120 was preferred .A two-stage sampling technique was employed. In the first stage firms were stratified into three groups (Small, Medium and Large) according to the number of employees, in the second stage simple random sampling technique was applied where each manufacturing firm from each group was given a serial number in its respective category and the numbers picked at random. The total number of large manufacturing firms was approximately 14; Medium was approximately 34 and small was approximately 72. The sample size was therefore 120 in the ratio: 3:7:15 representing Large, Medium and small manufacturing firms respectively.

3.5 *Research Instruments*

Data was collected by use of a structured questionnaire and field observation for triangulation purposes. The use of a questionnaire guaranteed anonymity to the subjects and hence encouraged them to give honest responses. This consequently increased reliability of the instrument (Mwangi, 1999& Orodho, 2005). The questionnaire constituted four parts: Part I contained questions based on the background of the firm, Part II constituted questions on the usage of mobile phones in the firms, Part III contained questions on a 5 point Likert scale of 1-Never, 2-Rarely, 3-Sometimes, 4-Often and 5- Very Often testing the contribution of each of the independent variables and Part IV had questions on the effect of mobile phone services on measuring firm performance.

3.6 *Data Collection Procedures*

Secondary data was collected from literature review using desk research approach. A survey of related literature was undertaken from the internet, journals and other related documents. The Questionnaire was self –administered with the help of research assistants to the 120 manufacturing firms which had been in operation for a minimum of three years.

3.8 *Data Processing and Analysis*

Data cleaning and transformation of some variables was done through existing tools in SPSS version 16.0. The researcher then subjected the data to detailed exploratory analysis through descriptive procedures. Reliability and internal consistency of the measurement models were tested using Cronbach's alpha .This is a measure of internal consistency, that is, how closely related a set of items are as a group.

It was employed to indicate the degree to which performance indicators measured the dependent variable (Firm Performance). A "high" value of alpha (reliability coefficient of 0.70 **and** above) is often used as evidence that the items measure an underlying (or latent) construct. The closer alpha value is to one the better (indicates internal consistency).

4.0 RESEARCH FINDINGS AND DISCUSSION

4.*1 Introduction*

The research informally gathered that mobile phone services are widely used by most manufacturing firms. In a sample of ten firms, at least seven were found to be using mobile calls, mobile instant messaging and M-Pesa phone services in their day to day operations. The proportion of manufacturing firms using the mobile phone service was roughly estimated to be between 70% and 80%. It was established that the most frequently used mobile phone services were Mobile calls (85%), M-Pesa (75%), and Mobile instant messaging (73%).

4.2 *Response Rate*

The distribution of the rate of response is shown in figure 4. 1. The study response rate was

100% which was highly significant and a reasonable representation of the sample and indeed the entire Population.

4.3 *Usage of Mobile Phone Services*

When asked to list how they used mobile phone services in their business transaction in order of frequency of use, 21.7% (Figure4.2) of the respondents said that the device came in handy when placing orders from suppliers, Contacting clients (19%) and making payments (10.3%). Other usage in order of importance included: receiving payments, making calls, confirming deliveries marketing/ advertisement and money transfer. The least usage of mobile phone was transportation logistics (0.7%), internet purposes (1.4%) and mobile banking (1.7%)

To determine the usage of mobile phone services the study also analyzed ways in which owners of manufacturing firms use mobile phone services to serve customers, suppliers, employees and others and the results were as follows.

Mobile Calls

This was the most frequently and widely used mobile phone service. Its use with customers included informing clients about finished goods (16%), Enquiries (14.4%), and advertising/promoting new products new (11.2%).

This service came in very handy when placing orders (4%) and following up/making payments (3.2%) to suppliers. The study revealed that it was a useful service especially to the management and supervisory team who used it widely to give instructions to employees (10.4%). However it was used to a very small extent to collect debts from customers (0.8%).

M-Pesa

In March 2007, Safaricom mobile operator launched M-Pesa the mobile money transfer system. It has since then become a popular mobile payment system with both the banked and the unbanked Kenyan population. This is one of the most recent developments which have revolutionalized the mode of conducting business in Kenya.

This service was widely used for receiving payments from customers (41.7%), paying suppliers for orders (12.8%), paying the employees' salaries/ wages (4.2%), and bills payment among others. This is one of the services that were widely used by manufacturing firms for purposes of money transfer and receipt.

Mobile Instant Messaging

Looking at the use of Short Messaging Service (SMS), most manufacturing companies were using it for making enquiries from customers (3.3%), informing customers of new prices of goods or services (1.7%) as well as new products (1.7%) and confirmation of delivery of products (3.5%). It was also being used for placing orders with the suppliers (5%), and for giving instructions to the employees among others uses.

Mobile Bills Payment

The study revealed that this service was not widely used .However a significant number of manufacturing firms (1.25%) were using it mainly to pay both their electricity and water bills

Mobile internet and Mobile Banking

In this study this services were in use to a very limited extent, mainly to advertise/ market products (2.1%) and make cash deposits (1.7%) to the business account.

It is therefore evident that the use of mobile phone call, mobile instant messaging and M-Pesa services are widely used in transacting business of all categories of manufacturing firms as well as communicating with employees. However mobile banking and mobile internet are the least used services.

4.4 *Perceived effect of Mobile phone services on firm performance*

One- Sample t-test was used to determine the application of mobile phone services on firm operations and approve or disapprove the null hypothesis H_{0i} : The perceived positive influence of mobile phone services (X1 to X6) on business performance is not significantly different from zero.

Qualitative data for each variable was collected from each firm in the sample using a five point Likert scale (1= strongly disagree, 2= disagree, 3=Neutral, 4=agree, 5=strongly agree) to find out the level of influence of Mobile phone service on the Performance of small, medium and large manufacturing firms. In this case the test value (t) is 3 which is the point of reference, the neutral value or the "Zero" value. If the value of t was above 3, the null hypothesis was rejected. On the other hand a t-value of below 3 implies that the null hypothesis was accepted.

Cronbach's alpha analysis (Cronbach's Reliability Test) for Mobile Phone Services was determined by constructing Each variable X1 to X6 using the following performance indicators (Table 4.4.2)

a) Sales Volume has increased
b) Profit has greatly increased
c) Cost of quality has greatly increased
d) Firm has made a lot of loses
e) Market share position has greatly improved
f) ROI, ROS and ROE is much better with the mobile phone service
g) Workers productivity and responsiveness has increased
h) Customer satisfaction ratings has improved
i) Firm's security has improved
j) The Mobile phone service is critical to long-term success of the firm

4.4.1 Mobile call

The Cronbach's alpha analysis of the mobile calls effect on the measures of performance gives a Cronbach's alpha value of 0.7 which is high, indicating a strong internal consistency among the measures of performance items. This implies that respondents who tended to select high scores for one item are likely to select high scores for others. Similarly, those who select low scores for one item are also likely to select low scores for others. This enhances the ability to predict scores from one measure of performance. On carrying out One Sample t-test to find out whether the perceived influence of Mobile call was significantly different from 0 (above neutral point) which in this case has a value of 3, it revealed (table4.4.1) that the effect was statistically significantly different from zero ($t=26.60$, $p<0.001$) leading to rejection of the null hypothesis. This implies that the perception of the respondents is that Mobile phone Calls have a significant effect on the performance of manufacturing firms.

4.4.2 M-Pesa

The Cronbach's alpha analysis for M-Pesa gives a value of 0.828 which is a high value, indicating a strong internal consistency among the measures of performance items. The fact that Mpesa alpha value is high makes it possible to predict scores from one measure of performance. On effect of M-Pesa on performance, One Sample t-test revealed (table4.4.1) that the effect is significantly different from 0 ($t=10.827$, $p<0.001$) leading to rejection of the null hypothesis. This implies that the perception of the respondents is that M-Pesa has a significant effect on the performance of manufacturing firms.

4.4.3Mobile Instant Messaging

The Cronbach's alpha analysis of mobile instant messaging effect on measures of performance gives a Cronbach's alpha value of 0.947 which is very high, indicating a very strong internal consistency among the measures of performance items. This therefore indicates that it is possible to predict scores from one measure of performance. Considering the findings of One Sample t-test depicted in table4.4.1, the results revealed that the effect is statistically significantly different from zero (t=8. 421, p<0.001) leading to rejection of the null hypothesis. This implies that the perception of the respondents is that Mobile Messaging has a significant effect on the performance of manufacturing firms.

4.4.4 Mobile Bills Payment

The Cronbach's alpha for mobile bills payment is 0.890 which indicates a strong consistency in the measures of performance. This means that one measure of performance can be used to predict the performance. On the effect of Mobile bills payment on performance, the t-test reveal that the effect is not significantly different from zero (t=-1.022, p=0.310) leading to acceptance of the null hypothesis. This implies that the perception of the respondents is that Mobile Bills Payments have no a significant effect on the performance of manufacturing firms.

4.4.5 Mobile Internet

The Cronbach's alpha analysis of the mobile internet effect on the measures of performance is 0.947 as shown in table4.4.2. This indicates a strong internal consistency among the measures of performance items. It implies that respondents who tend to select high scores for one item are likely to select high scores for others. Similarly, those who select low scores for one item are also likely to select low scores for others. This enhances the ability to predict scores from one measure of performance. When One Sample t-test was carried out to find out whether the perceived influence of Mobile internet is significantly different from 3 (Neutral), the t-test revealed that the effect is not statistically significantly different from zero (t=-1.543, p=0.127) leading to acceptance of the null hypothesis. This implies that the perception of the respondents is that Mobile Internet has no significant effect on the performance of manufacturing firms.

4.4.6 Mobile Banking

The Cronbach's alpha analysis of the mobile banking effect on the measures of performance is shown in table4.4.2. The Cronbach's alpha value in this case is 0.952 which is very high, indicating a very strong internal consistency among the measures of performance items. This means that respondents who tended to select high scores for one item are likely to select high scores for other items. Similarly, those who select low scores for one item are likely to select low scores for other items. The alpha value is significantly high for mobile banking which makes it possible to predict scores from one measure of performance. On carrying out One Sample t-test to check the perceived effect of mobile banking on performance, the results reveal that the effect is not significantly different from zero (t=-1.890, p=0.062) leading to acceptance of the null hypothesis. This implies that the perception of the respondents is that Mobile Banking has no significant effect on the performance of manufacturing firms.

5.0 DISCUSSION OF FINDINGS

Usage of Mobile Phone Services

According to Smith (2006), m-commerce is considered a pull market as reflected in increasingly positive attitudes towards the implication of such technology into routine decision-making tasks. This is in agreement with the findings of this study since 36% of the respondents indicated that advertising and enquiries on business services and products

were major operations that required use of mobile calls as a means of expanding or consolidating the market.

The study indicates that receiving of payments from customers was very critical in terms of money transfer as reflected by 42% of respondents. This finding is in tandem with the finding of Haaker et al (2006) who indicate that targeting, branding in the service domain, and revenue sharing in the finance domain were vital aspects in mobile commerce. However the above study indicates that networks and governance within the organization were anchored on how well communication was handled by use of technologies. This is in divergence with the finding whereby only less than 2% use the less expensive yet easy to use Mobile instant messaging.

Previous research findings revealed that convenience of the money transfer technology plus its accessibility, cost, and support factors are related to actual usage of the mobile payment services by the micro businesses to enhance their success and growth(Mbogo, 2010). This is consistent with the findings of this study which revealed that 85.7% of the respondents felt that usage of Mpesa was critical to the long-term success of a firm since it had a positive effect on the performance of the firms.

In this study 70.9% of the respondents confirmed that M-Pesa was often used in most firms as the most efficient tool for money transfer. This strongly tallies with the revelation from previous study that this mode of payment is an easier form of cash delivery to the suppliers and business partners, a system which is relatively affordable, personal and can be used anywhere and at any time (Anurag, Tyagi and Raddi, 2009). In his study Omwansa, (2009) reckoned that many unbanked Kenyans can now receive or send money wherever they are in the country.

Research findings from previous research indicate that there is appeal and utility of mobile banking services across the country as there are probably more people with mobile handsets than with bank accounts (Porteous, 2006). This contradicts the findings of this study which indicates that the mean of the effect of mobile banking on the measures of performance was minimal, only 2.82, with a standard error mean of 0.095 which implies that mobile banking was in use to a very limited extent.

Arunga and Kahora (2007) concluded that sole proprietors and small businesses in Kenya benefited hugely from the mobile phone revolution as they are able to make savings and gain access to more customers. This strongly conforms to the findings of this study which revealed that an overwhelming majority of the respondents (97%) agreed that mobile calls had improved customer satisfaction ratings. This therefore agrees with the assertion made by (Esselaar et al, .2007) that the highly visible intuitive role of mobiles phone is to keep in contact with customers and clients.

According to Anuradi et al., (2009), The micro-business operators are able to transact payments directly with their customers and suppliers through a mobile phone in the palm of their hands without necessarily going through a bank and without having to leave their business premises. This is beneficial because all it requires is for one to have a mobile phone and basic literacy to operate the phone. In concurrence, this study indicates that use of mobile phone with customers included informing clients about finished goods (16%), Enquiries (14.4%), advertising/promoting new products (11.2%), placing orders (4%), and following up/making payments (3.2%) with suppliers.

6.0 SUMMARY AND CONCLUSION

The technological based Mobile phone services have enabled entrepreneurs to model and launch new functionalities that seem to have provided life changing solutions to not only the manufacturing firms but also businesses. This study sought to explore the perceived influence of mobile phone services on firm performance. A sample of 120 manufacturing firms was used of which more than 78% had been in operation for more than three years.

The studies response rate was 100% which was highly significant and a reasonable representation of the sample and indeed the entire population.

Results reveal that of the 120 sample of manufacturing firms studied, 85% of the firms engage in product business while 40.8% engaged in service business. This is a total of 125.8%. The results therefore indicate that 25.8% deal in both products and services. In a sample of ten firms, at least seven were found to be using mobile calls, mobile instant messaging and M-pesa phone services in their day to day operations. The proportion of manufacturing firms using the mobile phone service was roughly estimated to be between 70% and 80%. This study revealed that manufacturing industry is male dominated with 80.8% of firms owned by men whereas only 19.2% were owned by women. This study has revealed that 85% of the respondents had attained secondary education and above whereas a significant 10% of the respondents had no formal education.

The study explored usage of mobile phone services in their business transaction in order of frequency of use, results showed that mobile call was widely used in placing orders from suppliers (22% of respondents), Contacting clients (19% of respondents), confirming deliveries (7% of respondents), making calls (7% of respondents), Advertising and marketing their new or finished products (5% of respondents). Some entrepreneurs confessed that M-pesa service was " God sent" It was the core of their businesses which was widely used for receiving payments from customers (41.7%), paying suppliers for orders (12.8%), paying the employees' salaries/ wages (4.2%), and bills payment among others. This is one of the services that were widely used by manufacturing firms for purposes of money transfer and receipt. Research revealed that most manufacturing companies were using it for making enquiries from customers (3.3%), informing customers of new prices of goods or services (1.7%) as well as new products (1.7%) and confirmation of delivery of products (3.5%).

It was also being used for placing orders with the suppliers (5%), and for giving instructions to the employees among others uses. Findings reveal that the other three services (Mobile bills payment, Mobile internet and mobile banking) were applied to a very small extent the least being mobile internet.

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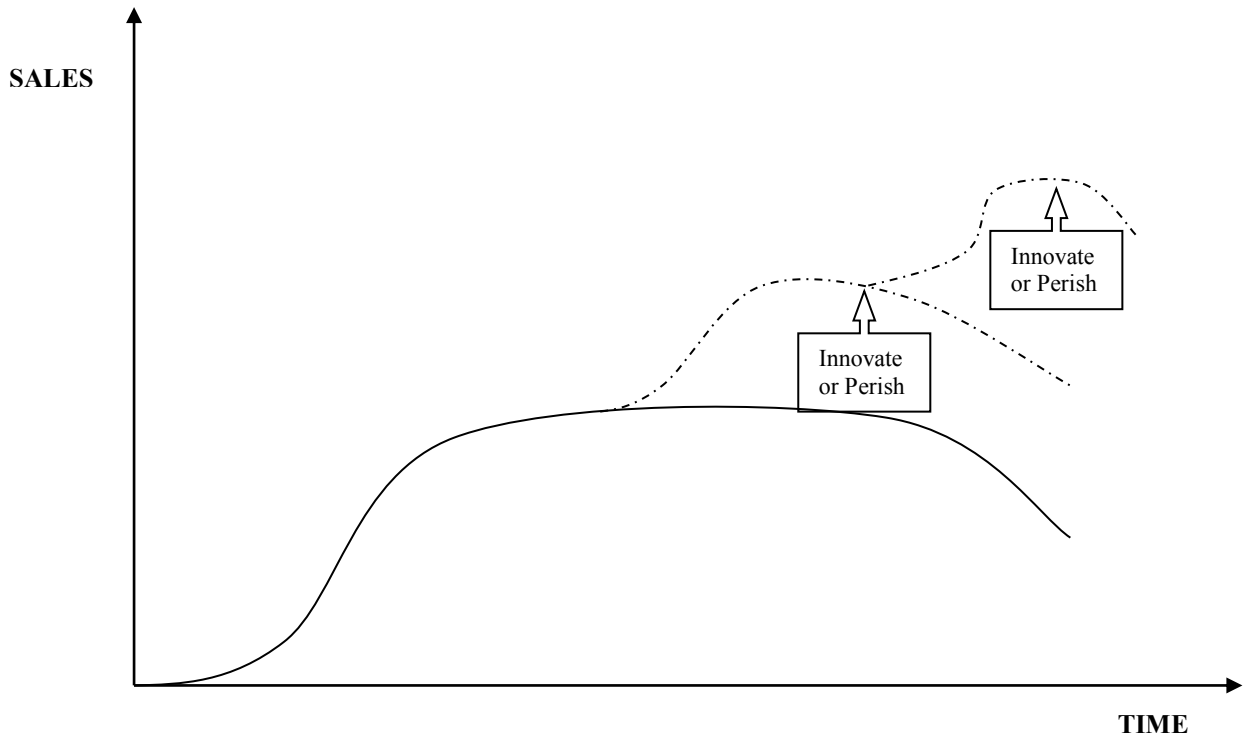

Figure 2.2: Business life cycle

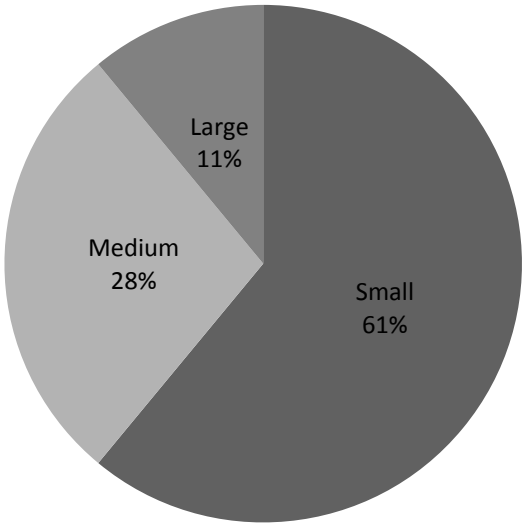

Figure4.1: Representation of response of firms in each category

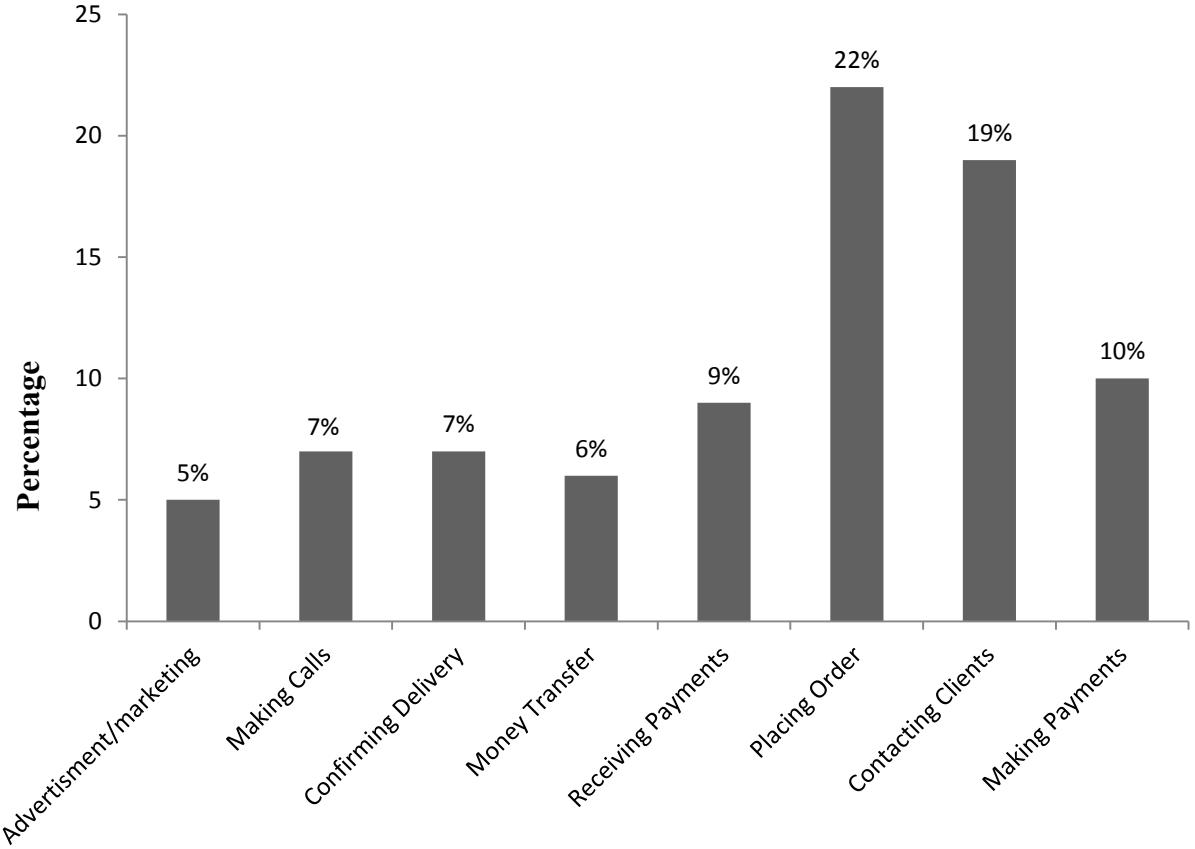

Figure4.2: Frequency of use of mobile phone services in carrying out firm operations

Table4.4.1: **Effect of mobile phone services on firm performance**

Variable	Mean	Std	t-value	p-value	Verdict
X_1	3.923	0.397	26.597	<0.001	**Significant**
X_2	2.853	0.714	-1.543	0.127	
X_3	2.820	0.675	-1.89	0.062	
X_4	3.63	0.584	8.241	<0.001	**Significant**
X_5	3.70	0.550	10.827	<0.001	**Significant**
X_6	2.90	0.809	-1.022	0.31	

X_1 =Mobile Calls Index, X_2 =Mobile Internet Index, X_3=Mobile Banking Index, X_4=Mobile Messaging Index, X_5=Mpesa Index, X_6=Mobile Bills Payment Index

Table4.4. 2: Cronbach's Reliability Test for Mobile Phone Services (Independent Variables)

Index	Variable	Item used	Reliability alpha
Mobile Calls	$\mathbf{X_1}$	all except c &d	0.700
Mobile Internet	$\mathbf{X_2}$	all except c &d	0.947
Mobile Banking	$\mathbf{X_3}$	all except c &d	0.952
Mobile Messaging	$\mathbf{X_4}$	all except c &d	0.947
Mobile Mpesa	$\mathbf{X_5}$	all except b, c &d	0.828
Mobile Bills Payment	$\mathbf{X_6}$	all except c &d	0.901