



Factors Influencing Adoption and Use of Mobile Technology Services by Women Entrepreneurs in Machakos County, Kenya

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ABSTRACT: *The purpose of the study was to assess the factors influencing the adoption and use of mobile technology services by women entrepreneurs in Machakos County, Kenya. The study adopted the use of Uses and Gratifications theory. Mixed method design was used. Systematic random sampling was used to select 350 respondents. Survey method was used to collect quantitative data. Quantitative data was analyzed using descriptive statistics and then presented in tables, figures and bar graphs. Purposive sampling was used to select 8 key informants and participants in the focus groups discussions. In-depth interviews and interview guide were used to collect qualitative data. Qualitative data was analyzed thematically and presented in narrative form. The study found that most of the entrepreneurs interviewed were sole proprietors at 75.3% as compared to partnership at 24%. This allows them to make strategic decisions about their businesses about which technology suits their businesses. The findings further revealed that 87% of the entrepreneurs used mobile phones for business transactions. The study concluded that the factors influencing adoption and use of mobile technology included; expenditure on air time which was the biggest challenge, capability to use the mobile phone, network failures, cost of a smart mobile phone which has advanced applications, regulatory policies and electricity interruptions since the phone has to be charged regularly to remain in use. The study recommended that service providers need to develop relevant programs for entrepreneurs that are easy to use and increase accessibility to useful information. They should take advantage of the untapped market of women entrepreneurs and come up with tailor made programs which are gender based, reduce the prices of mobile handsets, and calling tariffs and open up branches in the rural areas for easy accessibility. The service providers need to promote the use of various mobile applications already in use to improve market accessibility. This includes the use of popular social sites for marketing by women entrepreneurs, e.g. Facebook. This can be done through workshops, campaigns and promotions. Several enterprises are already using these sites to advertise their products and services, to communicate with potential customers.*

Keywords: *Women empowerment, Women Entrepreneurs and Mobile phone technology*

I. INTRODUCTION

The term new media encompass the emergence of computerized, digital or networked information and communication technologies in the late part of the 20th century. Most new technologies described as “New media” are digital, often having characteristics of being manipulated, networked, compressible, interactive and impartial (Herrington, 2009).

This study focused on mobile technology services as it is one of the forms of new media. The spread of mobile phones across the developing world is an example of most remarkable technology introduced the past decades. This technology has been facilitated by the use of affordable handsets and prepaid cards which had enable its accessibility by hundreds of millions of first-time telephone owners to make calls and send text messages in their daily communication. However, new mobile users still live in informal cash economies, without access to financial services that others take for granted (Afrobarometer, 2013). Across the developing world, there are many people with mobile handsets than holding account in bank (Porteous, 2006).

Mobile Technology

Mobile technology has been adopted cellular communication. Mobile code division multiple access (CDMA) is a technology that has evolved speedily over the past years. Mobile phones, particularly Smartphone support a wide range of services such as multimedia services, messaging, access to Internet, email, wireless

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communications, business applications, photography and gaming. Such phones are referred to as smart phones as they offer more general computing capabilities. The technology allows the mobile population to use company resources and data. Whether your staffs are travelling to meetings, out on sales calls, working from a client-site or from anywhere on the globe, mobile phones can help them keep in touch, be productive, and make use of company resources (Chibba, 2009).

Mobile phone devices can also change the way a company does business - new technologies lead to new ways of working, and new products and services that can be offered to one's customers. They can make one's team more creative, efficient and valuable clients. Mobile technology allows organizations to have an exceptional level of connectivity between vendors, employees and customers. It enables workers to download applications which enable their devices to connect with others through social media such as Facebook, Twitter and LinkedIn. The firm can also use web-based applications to facilitate direct communication with their audiences in many ways (Chibba, 2009).

Empowerment of women

According to Kretschmer (2012), empowerment of women necessitates transformation of labour division as well as changes in ideologies prevalent on the roles and responsibilities of women and men. Empowerment helps achieve practical as well as strategic gender needs by enhancing self-reliance among women and acknowledging power dynamics rooted in gender class, ethnicity and age. Malhotra *et al.* (2002) in their differently view argue that "empowerment" has been used to advocate more often for certain types of intervention strategies and policies than to analyze them. This is demonstrated by a number of documents from the United Nations (UNDAW, 2001; UNCEF,2009; UKDID, 2000), and other organizations.

For women to get empowerment economically, they have no option but to compete in a world male-dominated. The interest of this study was to assess whether cell phone is an empowering tool for women or not. Kretschmer (2012) posits that women empowerment is about the processes by which women who have been denied the ability to make strategic life choices. The ability of women to exercise choice as they incorporate three inter-related dimensions such as: resources, agency and achievements. He continues to argue that these three dimensions of choice are indivisible in determining how to measure women empowerment. For cell phones to contribute to empowerment they have to fit within the three dimensions.

Entrepreneurship is perceived as the engine of growth in Kenya because of its key role in economic development. The sector provided a lot of opportunities for employment as well as market for goods and services thus steering competition and innovation (KIPPRA, 2002). Entrepreneurship comprises about 75 % of all businesses, employ 4.6 million people (30%), accounts for 87% of new jobs created and contributes 18.4 % of the GDP (GOK, 2013). The Kenyan government considers the sector as the center of industrial development and has held different development strategies (GOK, 2010). However the sector faces binding challenges that make it impractical for it to realize its full potential and deliver to the government expectations. The challenges included limited access to market, information, finances and technology and the drawback of policies which do not business environment among others (GOK, 2005).

Information Technology (IT) is identified as an enabler of other sectors, presenting enormous opportunities for entrepreneurs to improve market access (GOK, 2007). Mobile telephony has become a part of everyday life for millions of people and business organizations across worldwide. People in the business world nowadays consider the ability to communicate by mobile phones as necessary and ordinary (Donner & Escobari, 2009). The significance of mobile telecommunications services beyond basic person-to-person voice communication cannot be overemphasized. Mobile phones have become absolutely crucial for anyone doing business today due to the fact that they provide flexibility and efficiency in communication that has never existed before, and has quickly become expected in the fast moving world of modern business (Joseph, 2005).

Mobile phone services have become an indispensable tool in the highly globalized, knowledge economy. Today entrepreneurs can carry out business through their mobile phone thanks to WhatsApp, face books, M-Pesa, Airtel money and others such as OLX. This is because one only needs to take a photo of the product he/she is selling post it through WhatsApp, negotiate through the use of WhatsApp, facebook or SMS, and upon agreement receive payment through M-Pesa or Airtel money. This saves the seller and the buyer operation costs which leads to improved profits and thus raising the living standards of Kenyans. This has led to their finding a place in the government of the day which is encouraging youth and women to engage in business in order to earn a living.

1.1 Problem Statement

Despite the potential of enterprises run by women to boost local economy (USAID, 2001) briefs indicate that women owned enterprises grow less rapidly and are likely to close sooner than male counterparts. According to Kalundo (2012), women's productive activities were concentrated in micro-enterprises such as hawking, retail, manufacturing in small scale and market trade periodicals. In this regard women were concentrated in enterprises that conform to their traditional gender roles, mostly in food processing and garment

making. This situation is evident in Kenya (GoK, 2009). This choice of business also defines profitability of the enterprise. Women owned enterprises generated less revenue compared to revenues generated by enterprises owned by men, which earned 74% more (Central Bureau of Statistics, 2011)

Reynolds (2004) posits that women entrepreneurs are unlikely to adopt more sophisticated technologies if they are not familiar with the basic ones as opposed to men. That's why entrepreneurs owned by men grew faster at a rate of 32% annually as compared to 16% of those owned by women. This is because of the limited number of women who have technical knowledge. Women are still observed to be lagging behind in development issues and lacks empowerment traits.

Many women businesses are still missing the huge potential benefits of using mobiles technology as a part of their business enhancement (Ikiara, 2001). The different modes of communication embedded in most mobile phones including voice, SMS, radio, TV, interpersonal and group communications don't seem to improve the situation (AFFRI, 2009) Most of them are still clinging to the old fashion mode of communication that include newspapers, radio, banners and posters, and the use of traditional yet ineffective landline when it comes to interpersonal communication. This has resulted to some of them despite, being in the market for long, being overtaken if not edged out of the business by those that utilize mobile telephony because they are unable to achieve their set business goals (Svanaes, et al, 2010). This study sought to assess the factors influencing the adoption and use of mobile technology services by women entrepreneurs in Machakos County, Kenya.

II. LITERATURE REVIEW

This section presents theoretical and empirical review

2.1 Technology Acceptance Model

Davis (1986) developed the Technology Acceptance Model based on the theory of reasoned Action which specifically deals more with the prediction of the acceptability of an information system. This model serves to predict the acceptability of a communication tool and to help in identify modifications to be brought to the system to make it more acceptable by users. This model suggests that acceptability of an information system is influenced by factors such as the perceived usefulness and perceived ease of use.

Perceived usefulness is defined as being the degree to which a person believes that the use of a system will improve his performance. In this study women entrepreneurs would adopt mobile technology when they perceive that it is useful in their business operations. The mobile phone has many features e.g. making calls to reach customers, suppliers and other stakeholders, internet to access markets and Banking facilities.

Perceived ease of use points to the level to which a person believes adoption of the use of a system will be effortless. Several factorial analyses demonstrated that perceived usefulness and perceived ease of use can be considered as two different dimensions (Hauser, 1980). Women avoid any technology which they feel is hard and requires learned skill (Kotelnikov, 2007). Among all technologies, mobile technology is termed as the easiest to operate requiring limited skill. Women entrepreneurs can therefore incorporate mobile technology in their business so that they can benefit fully from the services mobile phone technology offers.

The Technology Acceptance Model postulates that behavioral intention determines the use of an information system while behavioral intention is influenced by the person's attitude and perception towards the use of the system. According to Davis, individual's attitude is not the only determinant of their system use but is also based on the impact on their performance. As such, in cases of non welcoming of information system by an employee, the probability that they will use it is high they perceive that the system to improve their work performance. Furthermore, the Technology Acceptance Model postulates that there is a direct relationship between perceived ease of use and perceived usefulness. In cases where there are two systems offering the same features, a user would find the one that he finds easier to use to be more useful (Dillon and Morris, on 1996).

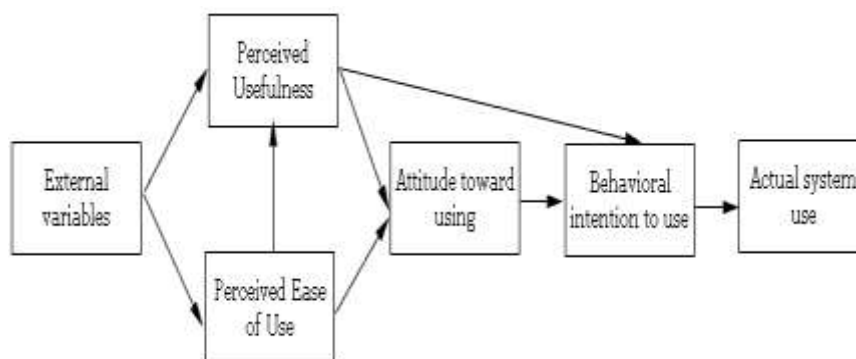


Figure 1: Technology Acceptance Model from Davis, Bagozzi et Warshaw (1989)

Davis (1986) argued that the perceived ease of use of any system influences the attitude of an individual in a significant way through the mechanisms of instrumentality and self-efficacy. Bandura (1982) developed the concept of self efficacy which explains that the more a system is easy to use, the greater should be the user's sense of efficacy. He further explained that easy to use tools makes the users feel that they have control over what they are doing (Lepper on 1985). As such, efficacy is one of the main determinants of intrinsic motivation (Bandura on 1982; Lepper on 1985) and as such illustrates the direct link between attitude and perceived ease of use.

The perceived ease of use can also contribute in an instrumental way in improving a person's performance. This is based on the fact that the user has to deploy less effort with a tool that is easy to use thus sparing effort to accomplish other tasks (Davis, on 1986). It is however interesting to note that the research presented by Davis (1989) to validate his model, demonstrates that the relationship between the intention to use an information system and perceived usefulness is stronger than perceived ease of use. According to this model, it is therefore expected that the major determinant of use of a system is the perceived usefulness of a tool.

This study applied the use of Technology Acceptance Model due to its practicality in entrepreneurship environment. Studies such as Reynolds (2004) and Kalundo (2012) have found that women will adopt technologies which are easy to use and the technological usefulness is evident, and these are also the two main factors of TAM.

2.2 Factors that influence the adoption and use of mobile technology services by women entrepreneurs

The environmental factors influencing adoption of ICT includes the physical conditions such as time, noise, space and temperature. According to Sida Review Report (2010) East Africa is characterized generally by weak infrastructure, such as bad road conditions, poor transport network, limited electricity, limited health facilities, financial institutions and weak public offices. The picture already paints East Africa as a place where basic necessities do not reach the majority of the population because of the inadequate facilities available. The organizational factors have also been found to will influence mobile phone service adoption which includes social network, management and organizational pressures, and word processes.

Technical factors have also been found to influence adoption and use, for example, system configuration, system stability and network connectivity. The mobile penetration in Kenya is 89. 1%, yet coverage is 34.14 % meaning that there are many areas where access to signals is not available (CCK Sector report, 2012. According to Nairobi GSM Networks Report (2009) also, Safaricom provides bulk of this coverage as it has the best network coverage however the report further indicates that Safaricom has the poor network quality compared to Airtel and Orange which are the other Mobile Network Operators (MNOs) in Kenya. This means that access to services may not be effective.

Social factors has also has influence on the adoption and usage of mobile phone services. The society engaged in mobile phone usage accesses services described by various scholars as the Information Knowledge Society, Network Society and Post Modernists (Manuel Castells 1996, Van Dijk 2009, Stalder 2006). What is unque in these characteristics is the fact that the society is liberated through high affinity for independence and freedoms and are eager to take charge of activities in their lives at convenience. Kenyans economy has also been described as supportive as relatives in the rural areas and 79% of Kenyans live in the rural areas (IFAD, 2011).

The findings by Ndii (2013) showed that mobile phone telephone technology define some variance in the the banking industry in Kenya. However, the variance has been explained not to be higher than the unexplained percentage since there are other variable which explains much variance in financial deepening in the banking industry. As such, the results indicated that none of the variables is significantly related to the dependent variable.

Mobile phone usage can therefore only be deduced from the findings of studies on ICTs in developing countries. These studies acknowledge the positive influence of the use of mobile phones on enhancing women livelihood as well as cautioning. Wakunuma (2006) Did a study on mobile phones and women in Zambia. The findings of the study revealed that the use of mobile phone can reinforce the existing gender relationships and also strengthen male-dominated societies and power structures. An example of such a situation would be evidenced by some husbands feeling the need to determine the usage of phone among their wives. In as much as benefits of using mobile phones seem to be more that its disadvantages, mobile phones may not necessarily empower women in some cases but rather continue to subject them into already gendered categories of action and thought. This supports the notion that technological innovation only cannot guarantee women empowerment neither can it address the substantial challenges facing women's political, social, and economic development (wakununa, 2006). Harnessing of ICT thus hold great potential for information access among women at individual level thus bettering their self-esteem, expose them to more career opportunities, increase their confidence and as well as improving their lobbying, advocacy and networking. ICTs also have potential self-development among women.

According to Natasha (2003), ICTs have the potential to give a major boost to women's political, social, and economic empowerment thus promoting gender equality. This however can be realized by properly

understanding the gender dimensions of the information society. This has been given credence by Sylla (2000) on 'WAP' systems in 100 Senegalese agriculture networks. Rural farmers were provided with mobile phones with coded access to the Internet to get information market prices on a daily basis. Women in rural areas who involved in the project specialized mainly in processing traditional food crops. The mobile phones allowed made it possible for them to get in touch with the rural business networks to get information on crop provision. They used the information collected from website to choose the most interesting markets to buy products they required. They also used mobile phones for other personal purposes. Farmers in the rural areas found mobile phones to be very appropriate as it could be easily carried around and as such preferred to computers. Marcelle (2002) in his study concluded that when ICT is used effectively, it can be a powerful tool for empowering women. This was justified by the fact that mobile phones has the potential to create better opportunities among women to exchange information and gain access to online education thus facilitating their ecommerce activities. Huyer *et al.* (2003) identified two approaches through which ICTs can be used to empower women, one was based on individual empowerment and the other was based on group empowerment. Although these approaches can be perceived to be different, they are not mutually exclusive but rather are complementary.

The findings of a study Mulwa (2012) revealed that the poor and marginalized population had been excluded from formal banking services for a long period of time. The exclusion was occasioned by factors revolving around logistics and economic viability. As such, wireless communication and mobile banking technology promises to break these barriers by as it provides access and at the same time aggregating financial transactions by individuals to constitute viability. Due to the persistence of this exclusion, the use of the mobile phones in performing monetary transactions has not yet occurred. Consequently, despite the breakthrough brought by mobile phone technology, products using the platform have not experienced success in uptake and use. Gathuki (2011) pointed that although the Government has put in place various measures create awareness among women to participate in their large numbers. The general situation is that there are various forces influencing participation of women. The key findings revealed that most women had low levels educational in development projects. Women participation in development activities if therefore perceived to be greatly influenced by socio-cultural issues. The government should therefore strengthen the relevant policies and legislate projects with the sole objective of creating a level playing ground as women in these projects should be encouraged to work in teams and form groups for lobby to highlight their needs and advocate for more representation in development projects.

2.2.1 Barriers to the Adoption and use Mobile Phone Technology

In as much as many business organizations have engaged the service, of mobile telephony, various challenges have been identified that have had negative impacts on these business organizations. Review of literature shows that access to mobile phones and Information Communication Technologies (ICTs) resulted from the influence of different factors. The first in the list is low access to ICT tools. According to Marcelle (2002) many women across the world still are not able to fully benefit from such tools due to poor connectivity, inadequate access, illiteracy, and language and behavioral barriers, among others. An UNDAW Expert Group Meeting (2002) provided a deeper understanding of these obstacles to explore ways through which the fast ICT diffusion is associated with growth of the sector risked women empowerment and at the same time offered employment opportunities.

According to Jorge (2002), the benefits are affected by the existence of communication networks and access to information on women needs. Network among women is a potential for the effective information transfer among themselves and their husbands. Natasha (2003) found that constructs of gender in terms of social and cultural aspects, poverty, illiteracy, language barriers and lack of access are among the factors inhibiting access to ICTs among women in developing countries.

One of the biggest fear in many organizations running business is the over use of mobile phone and the costs associated their use. This portrays a potential danger especially when employees are using business mobiles based on the risk that some employees may misuse the phone resulting into massive bills (Hanz, 2009).

It has been noted that without strict codes in place, some employees deliberately misuse their phones, and make personal phone calls (Gebauer and Shaw, 2003). The costs of mobile phones in businesses can at times be very high though there are several ways which can be used to significantly lower the bills. In cases where employee restricted on the use of mobile phones, the costs are normally maintained low. Use of mobile phone with dual lines or charging employees for the calls they make which are not related to the business keeps the bills low. It has also been realized that the choice of the right package with the right features and prices can also make a big difference in the cost of business (Sarker and Wells, 2003).

Most external barriers come from business related factors. Lacovou *et al.* (2005) suggest that there are three factors responsible for adoption include pressure from outside, the perceived benefits of the adoption of technology and the readiness of the organization. Among them, perceived benefits formed a key reason why entrepreneurs adopted and continued to use the mobile phone (Barua, 2005).

Tarafdar’s study (2007) suggested that external environments are very crucial factors influencing the adoption of Mobile technology. He also points out that organizational and environmental characteristics are required for adoption to take place. Some studies (Ritchie and Brindley, 2005) suggested that, as a primarily external factor for adoption, the role of the government is a very important factor in the ICT adoption.

Most of the roles are related to financial supports such as tax breaks and direct support of the development of application. OECD (2000) mentioned that MSEs need more support in terms of financing compared to the large enterprises due to the fact that their characteristics portrays they to have inadequate experience and weakness of market power. Mobile phone adoption in SMEs depends on the owner being the decision- maker. The ability of the owner in ICT’s knowledge or skills definitely increases the opportunity of mobile phone technology use amongst SMEs. Reynolds (2004) found that women entrepreneurs are unlikely to adopt technologies if they are not familiar with them.

Increase in mobile phones accessibility has enabled changes in different sectors of the economy particularly the urban informal sector with SMEs changing their business thereby impacting on it as one of the fast growing sector in the Kenyan economy in terms of creating opportunities for employment (Government of Kenya, 2012). Mobile Phone Technologies have the potential to improve the economic performance of SMEs affecting almost every structural characteristic of these organizations. The usage of mobile phones is expected to gain prominence among SMEs in Kenya considering the rate at which it is used.

III. Methodology

The research was conducted in Machakos Municipality of Machakos county. Machakos County is a county of Kenya and its capital is Machakos town. Its largest town is Machakos town, Kenya’s first administrative headquarters. This study used mixed methods research approach. The study population was women entrepreneurs in Machakos municipality. Systematic sampling technique was used to select 350 women entrepreneurs. Purposive sampling technique was used to select key informants. The Key informant interviews comprised of 2 women group leaders comprising of the chairlady and the secretary, 2 officials in charge of ICT and business from the service providers (one from Safaricom and the other from Airtel), 2 officials from the Ministry of Information Communication and Technology and 2 county officials in charge of business development and licensing. Questionnaires, interview schedules and focus group discussions were used to collect the data. Qualitative data was analysed by use of descriptive statistics such as frequencies and percentages while qualitative data was analysed using thematic analysis technique.

IV. FINDINGS OF THE STUDY

4.1 Factors that influence the adoption and use of mobile technology services

Benefits of adopting Mobile use in business

Table 1. Benefits of Mobile use in business

Benefits	Strongly Agree		Agree		Not sure		Disagree		Strongly Disagree	
	F	%	F	%	F	%	F	%	F	%
Improve the business performance	92	30	157	52	31	10	14	4	7	2
Savings and accessing loans	52	16	82	26	28	8	134	42	17	5
Receiving money and making payments	80	25	175	55	16	5	36	11	9	2
Improved World interaction	103	32	163	51	30	9	17	5	2	0.6
Access Information	122	38	166	52	20	6	7	2	4	1
communicate with customers	94	29	186	59	10	3	16	5	9	2

On the side of the benefits associated with the use of mobile technology services, the study established that mobile technology services helped improve business performance of the women entrepreneurs (82%). These findings agree with the study by (Kretschmer, 2012) on Information and Communication Technologies and Productivity Growth which found out that mobile technology services have improved businesses in developing countries. The study done by United Nations Women Global (2003), from India to Senegal to Kosovo found that women are using the power of mobile phones to unlock economic opportunities. They perceive the phone as an essential productivity tool. A key informant at the county office supported these findings by saying that many women owned a mobile phone. He added,

C1: We have witnessed a tremendous improvement in women business performance. Women are using technology to sell and buy wares thereby increasing their returns. Nowadays we don’t have business women who are unable to pay their county taxes. In fact, some pay in advance which means that they get sufficient revenue.

Responding to use of mobile phones to save and access loans 42% disagreed that they access the service through the phones. The findings contrast with the study of (Liu & Mithika, 2009), who did a study on mobile banking in Nairobi and found out that majority of the women were using their mobile phones to do banking services. The findings concur with the interviews with both focus groups because only 5 out of the 12 participants used their phones to save and access loans, which is 42% and is the same as the research findings.

The study established that 80% of the women entrepreneurs used mobile phones to receive money and make payments through Mpesa and Mshwari services. This differs with the study done by (Mulwa, 2012) on financial inclusion for people in rural areas. The study found that the products utilizing the mobile phone technology have not experienced success in uptake and use. The findings were supported by a key informant from Safaricom mobile service who divulged,

S1: Mpesa and Mshwari services are the main services which the women entrepreneurs use to run their businesses. There is a lot of sending and receiving money using Mpesa. It has changed the way of doing business for most entrepreneurs.

The study found that women entrepreneurs used the mobile phone to access business information (90%). This information agrees with the study of (Mutwiri, 2012) which was conducted in Machakos county using mobile technology in farming whose findings were that farmers who were using mobile phones in getting information really benefitted.

Respondents in the study (88%) agreed that they use mobile phones to communicate with their customers in doing business. This shows that mobile technology has great impact in doing business since majority of the customers have mobile phones as reflected in the study. For any woman entrepreneur to succeed in business, therefore, one needs to own and use a mobile phone as it is reflected in the modern business industry. The current study finds itself in agreement with the literature reviewed by (Hanz, 2009) which posits that any business in the current century that does not embrace the mobile technology is bound to fail. A study that was carried out in India by Malhotra, et al. (2002) revealed that women entrepreneurs (95%) had adopted the mobile technology in day-to-day running activities of their businesses.

These findings were in agreement with the focus groups discussion participants who agreed that they use the mobile phones to communicate with their customers. One of the participants said,

W6: I spend most time talking to my customers through my mobile phone. In fact I have not met some of them physically but we communicate regularly. I can either call them or text. My mobile phone does the walking for me because I can reach all of them in the comfort of my premises and even from my house.

When well harnessed, the mobile phone can improve businesses run by women. One can reach out to customers and even new markets and thereby improving the performance of their businesses.

Factors determining mobile phone technology adoption

Table 2. Factors determining Mobile adoption

Factors	Strongly Agree		Agree		Not sure		Disagree		Strongly Disagree	
	F	%	F	%	F	%	F	%	F	%
Time saving in service delivery	42	26	108	67	7	4	2	1.3	0	0
Promotion of e-banking and e-marketing	68	22	91	29	130	42	18	5	1	0.3
Services of mobile technology are easy to use	87	28	185	59	24	7	11	4	2	0.6
Expensive in using the technology	35	11	104	33	72	22	89	28	14	4
Lack of knowledge on mobile technology	33	10	106	33	115	36	50	15	12	4

The current study revealed that time saving (93%) and ease of use of mobile services (87%) influenced greatly the use of mobile technology in business. Literature reviewed established that time saving in service delivery, use of e-banking and e-marketing, knowledge about mobile business and various services easily accessed through mobile technology were the main reasons for the adoption and use of mobile technology. The findings contrast with the study by Gathuki (2011) whose findings where that time saving, was the main factor that influenced adoption and use of mobile technology by women entrepreneurs in Machakos county.

The findings also contradict the results from the focus groups, who said that some of the services of the mobile phone were not easy to use. From a total of 12 participants, only 3 had accessed internet on their phones. The rest said they had not accessed it because they could not understand how to go about it. One commented,

W5: There are so many services in my phone which I don't know how to use. I don't even know how to use Mshwari. Even accessing internet is a problem to me. In fact, I took so long to understand how to use Mpesa. I only used to call and text because those are easy to use.

The mobile phone has so many services and if women entrepreneurs can harness all of them in their businesses, they would save a lot of money and time and their businesses would grow because they would earn more profit. Concerning mobile technology services to promote e-banking and e-marketing 55% of the respondents agreed that the technology assisted in promoting e-marketing and e-banking. This concurs with the study done by (Sylla, 2000) in Senegal on rural women farmers. The study found that the rural women found the mobile phone appropriate because they could select the most interesting markets at which to sell and buy the products they needed.

On cost, (44%) respondents said that mobile phone technology services were expensive to use while 28% said that they were not. These findings agree with literature reviewed by (Hanz, 2009) who postulates that the cost associated with using the services of a mobile phone is so high to the extent that it increases the overhead costs which is quite damaging to business. The chairlady of a women group contradicted the findings and said, *L1: The use of the mobile phone has become cheap nowadays, because of the competition from the different service providers, calling cards have become cheap and calling time is more.*

The respondents (41%) stated that they lacked the knowledge to use mobile technology services while 15% disagreed. This might be the reason why the women entrepreneurs have not adopted the advance mobile phone applications. The findings agree with the Technology Acceptance Model which postulates that people will not adopt technology which is not easy to use.

Support services for the adoption and use of mobile technology in business

Table 1. Support service for mobile use in business

Support services	Yes		No		No answer	
	F	%	F	%	F	%
Opening of new markets	238	79	33	11	27	8
Enhancement of business	239	77	31	10	37	8
Provision of immediate feedback	251	81	36	11	22	7
Availability of internet services	225	73	62	20	19	6
Strength of internet signal	110	38	68	23	109	37
Capability of women in using mobile technology	238	75	20	6	59	18
Effects of regulatory issues in adoption and use of mobile technology	120	38	148	47	43	14

It was established from the study that most of the factors that were encouraging women entrepreneurs in Machakos county to use mobile technology services in business included; the need for immediate business transaction feedback (81%), the desire to reach new markets (79%), the ability to enhance the business growth (77%), the ability and affordability of the mobile phones (75%) and availability of internet connectivity in the area were the major reasons which influenced the adoption of MT. The secretary of the women group supported the findings by saying,

L2: The mobile phone gives me instant feedback especially when I want to get urgent information from my customers and am able to reach new markets globally. For example, since I sell clothes, I can call my customers when am buying clothes in Turkey and ask them their sizes and preferred colors and I get the information instantly, so I purchase what they want.

However, the study also discovered that the regulations from either the government and service providers and also the poor internet signal (38%) discouraged the use of mobile phone technology services in Machakos County. The study concurs with the study of Donner & Escobari (2010) who conducted a study on mobile use by micro and small enterprises in developing countries and found out that the regulations that were put in place and lack of facilities hindered the faster development of mobile technology in business in most of the developing countries.

These findings contrast with the information from a key informant in the ministry of ICT who said that the government has put favorable technology regulatory policies for the small and medium enterprises (SMEs) in order to encourage and promote their growth.

Effects of power supply on the usage of Mobile phones in Business

Table 4. Power supply effects

Response	Frequency	Percentages
Quite often	38	11.4
Often	121	36.4
Not often	120	36.1
Never	36	10.8
No answer	17	5.1
Total	332	100.0

The study found that the power supply is a factor that influenced adoption and use of mobile technology services by women entrepreneurs in Machakos County (47.8%). This concurs with the study done by Strategic Growth Concepts (2013) on mobile technology and productivity which found that power supply is a major factor which determines the adoption of mobile technology. The findings also support the findings of the two focus groups discussions where members said that power supply was a factor that influenced the use of their mobile phones. Most mobile phones need to be charged regularly and due to constant power cuts, and the mobile phones cannot work without a powered battery, it affects the phones usage.

The chairlady of the women group said,

LI: Power supply is an issue here; we have constant power interruptions which make it impossible to use mobile phones and especially smart phones which have to be charged daily. It is very frustrating when your clients cannot reach you and you cannot reach them because your phone is off due to lack of power. In fact those who can afford have bought generators and other power back-up systems to be able to charge their phones once there power interruption and especially rainy season when interruptions are more.

Chew (2011) recommends that solar panels can be substituted with electricity to charge mobile phones. This will make it possible for the women entrepreneurs to have charged mobile phones always and thereby be able to reach out to their customers any time.

Sales turnover before and after use of mobile technology in business

Table 5. Sales summary before and after adoption of mobile technology

Sale Turnover in Kshs.	Before the adoption of mobile technology		After the adoption of mobile technology	
	Frequency	%	Frequency	%
0-20,000	126	40	19	6
20,001-40,000	49	15	70	22
40,001-60,000	14	4	65	21
60,001-80,000	5	1	21	7
80,001-100,000	7	2	14	4
Above 100,000	3	31	15	5
No answer	104	33	104	33

In comparison with the sales turnover, the study exposed a positive upward growth of sales turnover. Starting with (Kshs. 0 – 20,000) in the first month before adoption (40%) and after adoption the sales increased and the people who remained in this bracket dropped to 6% from 40%. The trend continued positively but the sales turnover of (Kshs. 20,001 – 40,000) and (Kshs. 40,001- 60,000) benefitted greatly from the adoption of MTS. The study concurs with the literature on adoption of mobile technology by women entrepreneur, particularly a study done by Cherie Blaire Foundation for Women (2012) which revealed that mobile technology services added value for business growth for women entrepreneurship enterprises.

The findings support the information given by the key informant in the county offices. The monitoring and evaluation officially revealed that women entrepreneurs who have adopted mobile technology in their businesses had an increased income which enabled them to open other business branches or diversify in business. The service providers’ key informants (S1 and S2) concurred with this information and said that money movement among the women entrepreneurs both by Mpesa and Airtel money had increased. All focus groups participants agreed with these findings by saying that their monthly income had increased. These findings show that when mobile technology is adopted in entrepreneurship, it leads to business growth through more profits.

Performance of Business before Application of Mobile Technology

Table 52. Performance of business without mobile technology

Response	Frequency	Percentages
Poorly	252	75.9
No difference	19	5.7
Better	7	2.1
No answer	54	16.3
Total	332	100.0

The study found that most businesses performed poorly (75.9%) without adoption and use of mobile technology services. This supports the study conducted by FinMark Trust,(2008) who found out that in sub Saharan Africa businesses were performing poorly because of inadequate use of mobile technology services as compared to developed world where most of the women had incorporated technology in their businesses and were performing above average.

A key informant from the ministry of ICT (T1) concurred with these findings and said that before entrepreneurs adopted mobile technology services in their businesses, most of them were performing very poorly because they didn't have information on business and markets, and most closed down soon after opening and after investing much capital. All participants in the focus groups stated that their businesses were performing poorly before adopting mobile technology but they have seen tremendous positive change after adopting mobile technology services.

4.2 Summary of the findings of the Study

According to the findings of the study, most of the women entrepreneurs interviewed owned kiosks, retail shops and wholesales at 89.6%. Most of them at 45% owned retail shops. This concurs with other researches done on business ownership and especially with the findings of Donner & Escobari, (2010) on mobile phone use by micro and small entrepreneurs in developing countries. Their findings were that women entrepreneurs are gendered towards their domestic roles and that they shy away from challenging areas like manufacturing and production. This also agrees with the literature reviewed that when women want to earn money they turn to their domestic skills to exploit in the micro- enterprises (Gakure, 2004).

The study found that most of the entrepreneurs interviewed were sole proprietors at 75.3% as compared to partnership at 24%. This allows them to make strategic decisions about their businesses about which technology suits their businesses. According to the chairlady of the women group, most women go into business after failing to get formal employment or due to retrenchment. They set up businesses so that they become independent and make own decisions. They want to be independent and they do not even involve their husbands in the initial set- up.

From the study, it was discovered that 87% of the entrepreneurs used mobile phones for business transactions. The findings concur with the theory of Uses and Gratification which stipulates that the users deliberately choose a medium that will satisfy given needs and allow one to enhance knowledge, social interactions and companionship (Tankard, 2000). This means that the mobile phone has become an important tool in business transactions. It has helped women entrepreneurs to reach their customers, suppliers and even pay utility bills from the comfort of their premises or homes or even when travelling. This has made running of businesses easier.

The study found that Mpesa was the most widely used application with 87% of the respondents using it frequently. Mpesa is an application from the service provider, Safaricom, to send and receive money. Since its inception in 2007, it has grown in popularity because it can serve both the banked and the unbanked (Mulwa, 2012). This was supported by a respondent who runs a hotel in the focus group discussions by saying, *W4: Mpesa has revolutionized the way businesses are conducted and I cannot imagine running my enterprise without it. My suppliers are paid through Mpesa. This means that I would otherwise be spending a lot of business time going to pay them. But with the mobile phone, I simply reload my money and pay my suppliers and utility bills from the comfort of my hotel. I even have Paybill number which is registered allowing my customers pay via their phone. Life has become quite easier.*

Women entrepreneurs have adopted Mpesa in their businesses since it is easy to use and this concurs with the TAM theory which postulates that people avoid technology deemed hard to use and adopt the technology which they feel is easy and doesn't require learned skill (Kotelnikov, 2007). It also agrees with the Uses and Gratification theory which stipulate that audience uses a medium which meets their needs and goals. Mpesa meets their need of transacting business by using the mobile phone.

All the women in the two focus groups agreed that expenditure on air time was the biggest challenge, followed by lack of capability and skill, network failures, electricity charges, regulatory policies. The majority of the women entrepreneurs agreed that it is costly to use mobile phones. This was based on the fact that the user has to pay first before calling or sending SMS through subscription or buying air time. A call costing 3 Kenya shillings per second during peak period is quite expensive in developing countries where the majority of women live below the poverty line. Machakos experiences intermittent power supplies where all women entrepreneurs interviewed had experienced frequent load shading. This is in agreement with the findings of Tripathi (2011) in India where insufficient bandwidth, network failures, lack of security, power consumption and transmission interference were found to be a major challenge.

4.3 Conclusions

Since majority women entrepreneurs in Machakos county had not adopted the advanced mobile phone applications they could not secure better markets and prices for their products, and could not negotiate for suitable prices and timely communicate business-related information that enables women entrepreneurs to run their business effectively. The respondents who had adopted and used the mobile phone services in their businesses concurred that the mobile phone had improved their businesses and they felt empowered but they faced some challenges which made it hard to adopt and use the advanced mobile phone technology services. Among the challenges included; expenditure on air time which was the biggest challenge, capability to use the mobile phone, network failures, cost of a smart mobile phone which has advanced applications, regulatory policies and electricity interruptions since the phone has to be charged regularly to remain in use.

4.4 Recommendations

The service providers need to develop relevant programs for entrepreneurs that are easy to use and increase accessibility to useful information. They should take advantage of the untapped market of women entrepreneurs and come up with tailor made programs which are gender based, reduce the prices of mobile handsets, and calling tariffs and open up branches in the rural areas for easy accessibility. The service providers need to promote the use of various mobile applications already in use to improve market accessibility. This includes the use of popular social sites for marketing by women entrepreneurs, e.g. Facebook. This can be done through workshops, campaigns and promotions. Several enterprises are already using these sites to advertise their products and services, to communicate with potential customers.

Use of social sites will address the constraint of market spaces, high marketing costs, and use of intermediaries to reach more potential customers. Social sites have a very high traffic of potential customers who can be a ready market for products and services for women entrepreneurs across the country and especially in Machakos County. Social sites like OLX allows one to market, get the best prices and sell commodities online. One only needs to take a picture of the product and post it online. The service providers should also do a close monitoring and evaluation to assess the uptake of their products so that they can restructure their applications to address women entrepreneurial needs.

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