

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/283441629>

3. Komunte, M., Rwashana, A.S., and Nabukenya, J. (2012) Comparative Analysis of Mobile Phone Usage among Women Entrepreneurs in Uganda and Kenya. African Journal of computing and...

Article · January 2012

CITATIONS

0

READS

277

3 authors:



Josephine Nabukenya
Makerere University

46 PUBLICATIONS 247 CITATIONS

[SEE PROFILE](#)



Mary komu Komunte
Makerere University

1 PUBLICATION 0 CITATIONS

[SEE PROFILE](#)



Agnes Semwanga Rwashana
Makerere University

34 PUBLICATIONS 294 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



A Systematic Approach to Requirements Engineering Process Improvement in SMEs [View project](#)



System Dynamics Food Security Policy [View project](#)



Comparative Analysis of Mobile Phone Usage among Women Entrepreneurs in Uganda and Kenya

M. Komunte, A. S. Rwashana and J. Nabukenya PhD
School of Computing and Informatics Technology
Makerere University, Uganda
{mkomunte, asemwanga, Josephine @ cit.mak.ac.ug}

ABSTRACT

The mobile phone usage in women entrepreneurs have dramatically increased and continue to increase in developing countries. Despite a sporadic boom of mobile phone ownership by entrepreneurs, scholarly research of the social-economic implications on women entrepreneurs are limited. In addition, studies have been limited to individual countries, districts, organizations with limited focus on comparative country studies. The study uses activity and gender theories to explain various activities of women entrepreneurs in Kenya and Uganda using the mobile phone as a mediating tool to achieve the desired or expected object (benefits). This study used a mixed method approach, multi stage, purposive and convenience sampling were applied and the questionnaire, face to face interviews and focus group discussions were employed to study women entrepreneurs. Results revealed that women owned micro and small enterprises that belong to the informal sector in Uganda and Kenya. Results also indicated that mobile phone services and mobile money services influenced enterprise performance through operational, transactional and interactional benefits. However, mobile phone usage in women enterprises is curtailed by challenges with in and beyond access and ownership of mobile phones. Chief among these is network failures, buying air time, content control by their spouses and lack of awareness.

Keywords: Women, Entrepreneur, Usage, ICTs, Mobile phone, Kenya and Uganda

1. INTRODUCTION

The explosive growth of mobile phones has sparked off an information revolution. Mobile phones are revolutionizing access and usage of computational devices and internet. This revolution continues to evolve day by day. Not only do entrepreneurs and consumers go online or stand in queues to pay bills, buy tickets, purchase goods and services, and stay connected to their friends, but they are also adopting mobile phones at an incredible rate. Mobile phones have become personal computers with a wide set of input, output and communication features. This has changed the way women entrepreneurs work, consume, purchase and interact. The phenomenon growth is attributed to availability of cheap mobile phones and new telecom companies entrants in the market [38][8] and Mpogole et al [23].

Presently, the mobile phone is the predominant mode of business communication in the developing countries [39]. Mobile phone usage has spread across the World at a stunning space. The percentage of Africans accessing mobile phones leapt from 10 % in 1999 to more than 75% by 2010 [39]. For the majority of the poor population, the mobile phone is the mediating tool connecting them to the information society.

It is continuing to be the only ICT (Information Communication Technology) device, where developing countries are speedily catching up [15]. Today, many services have gone mobile. Namely, banking, entertainment, trade, health and learning. Mobile phones have become a significant part of ICT investment in the world. Mobile phones have started to play an increasing role in every sector such as industry, business, agriculture, education, government, health and many others.

The usage of mobile phones has dramatically increased in developing countries. According to UCC (Uganda Communication Commission) and CCK (Communication Commission of Kenya), Kenya had 29.2 million mobile phone users by the end of March 2012 while Uganda had 14 million in June 2011. This increase in the number of subscribers is attributed to the expansion of telecom operators who have improved network coverage. For years, Ugandans and Kenyans have been under the monopoly of posts and Telecommunication Companies respectively, which had few fixed telephone lines reaching rural areas. This meant that majority of the populations were underserved, as the services were poor and characterized with limited choices and high costs [38][8].

Currently, there is limited research on women's entrepreneurship in developing countries. Women the world over have been and continue to be marginalized in all development sectors. They are abused and dehumanized because of ignorance, and society lacks knowledge and information of who women are in economic development of any country.

African Journal of Computing & ICT Reference Format:

M. Komunte, A. S. Rwashana and J. Nabukenya (2012). Comparative Analysis of Mobile Phone Usage among Women Entrepreneurs in Uganda and Kenya. Afr J. of Comp & ICTs. Vol 5, No. 5. Pp74- 86



An appreciation of gender issues is important if we are to improve women competitiveness in the digital economy. Women are major players in informal business and own one-third of all firms in Africa Elena *et al* [17]. Therefore, there is need to combine efforts with governments, development agencies and women organizations to participate, understand, intervene, assess and evaluate mobile phone usage in women enterprises. With real timely information as an economic resource, women may transact their business efficiently. More so, the usage of mobile phones in women entrepreneurs remain under researched. There was no comparative study on mobile phone usage in women enterprises in East Africa. However, similar research was conducted in Bombay India among female micro entrepreneurs Aneela *et al* [4].

The goal of this research was to compare the mobile phone usage in women entrepreneurs in Uganda and Kenya. Uganda was chosen because it is a land locked country and the second largest telecommunications market in East Africa. Kenya was selected because it is the largest telecommunications market in East Africa. In particular, the research investigates the following questions: First, *what are the goal motives of using mobile phone services in business transactions?* Second, *to investigate how the mobile phone is being used in women entrepreneurs as a tool to access and use information in their enterprises?* Third, *what are the outcomes of mobile phone usage in their enterprises?* Fourth, *to identify challenges and barriers women entrepreneur face while using mobile phone services in their enterprises?*

2. THEORETICAL PERSPECTIVES

2.1. Trends in Mobile Phone Development

Mobile phone penetration has grown at unprecedented rate [39]. There were more than 500 million mobile phone subscribers in Africa [32]. The number of mobile phone subscribers has grown steadily both in Kenya and Uganda since the liberalization of telecommunication sub-sector through the 1998 communication act [8] [38]. Kenya had 29.2 million mobile phone users by the end of March 2012 while Uganda had 14 million by end of June 2011. This increase in the number of subscribers was attributed to the expansion of telecom operators who have improved network coverage.

The number of mobile phone companies had risen and there were six in Uganda (Orange, MTN, UTL, Warid, Air tel and itel) and seven in Kenya (Safaricom, Zain, YU, Orange, Econet and Telkom Kenya). The number of subscribers had increased tremendously and the mobile phone was the relevant technology for enterprises in developing countries [37]. The attracting things about the mobile phones were; it can be used by both the rich and poor compared to other ICTs like personal computers, laptops, tablet personal computers and others. In addition it is affordable or cheap, flexible as it can be used for text and, voice and has a two-way communication compared to radio and television Asheeta *et al* [5]. In turn, the mobile phones have low barriers to entry. It is easily accessible and low priced compared to personal computers and other hand held devices.

2.3. Mobile Phone usage in Enterprises

Research has shown and still sees crucial traces of mobile phone usage in enterprises presented in research literature [13]. Jensen [20] illustrates the usage of mobile phones in the fishing industry in Kerala, India. It was found that mobile phone usage reduced price variations, reduced waste and increased consumer and producer welfare. Similar results were examined in a detailed survey conducted by Salia *et al* [35] on mobile phone usage and fishermen in Ghana. Findings point out that mobile phone usage facilitated fishermen to increase their profits; expand their markets by gaining more customers, felt more secure at sea and remained in closer touch with their both families and fishermen. Conversely, in Uganda, mobile phones were used by fishermen in Kasensero, Rakai district for banking services. In Kasensero, fishermen used mobile phones to deposit their earnings, to settle utility bills and pay local traders [27].

Despite the above facts, mobile phones have not eliminated the role of intermediaries in the value chain [13]. For example, in a Nigerian case study of Aso Oke industry by Jagun *et al* [19], mobile phones could not be substituted for intermediaries. Intermediaries played a crucial role in the clothing industry because buyers were more informed on price, quality and design. Furthermore, mobile phones failed to help buyers to carry out inspection of design, finished cloth and level of order completion. More examples where mobile phones could not substitute for business intermediaries are presented by Abraham from India [1] and Molony [22] from Tanzania. Other findings like Aker [2] from Niger, Donner, [10] from Kigari Rwanda, Donner [12] from India, and Esselaar *et al* [18] from 13 African countries did not investigate the issue of middlemen or brokers. Therefore, it is important to critically investigate how mobile phone usage can help to check market prices, quantity and quality of products to by pass middlemen in the value chain [13].

The fishing and agriculture sectors share similar environments and challenges. Entrepreneurs in these sectors search for markets where to sell their products to improve their standards of living. These agriculturalists require knowledge of the market prices through reliable access to information facilitated by mobile phones. According to [2], mobile phones were used to search for markets of grains in Niger. Like wise, Bjorn and Matotay [7] found out that the mobile phone helped farmers to hire and negotiate prices for tractors in rural Tanzania. More so, they were used for market research and to coordinate the work of intermediaries and others that increased opportunities and reduced risks for rural farmers. The analysis of these studies shows that mobile phones enabled business owners to earn significant economic benefits. This is further confirmed in a survey conducted by Souter *et al* [37] in Tanzania, India and Egypt. The study however, found out no economic gain realized. There was no relationship in any of the 3 countries between income and frequency of mobile phone usage and access to information.

On the other hand, the trade sector has also benefited from mobile phone usage. Examples are presented by Jugun et al [19] from Nigeria, Donner, [10] from Rwanda, Donner [11] from Kigari Rwanda, Donner [12] from India and Aneela *et al* [4] from India. The studies suggested that entrepreneurs used mobile phones for mobility, which mobility facilitated procurement, marketing, increased sales, acquiring more customers, starting new business and social benefits. These findings however, are sex disaggregated and herein a need to investigate further how mobile phones can eliminate brokers, facilitate procurement process, access real time market information, increase productivity, improve business processes, transform enterprises and the security issues of actors in the value chain. More so, there was no comparative analysis of the impact of mobile phone usage across countries and subsectors [13]. Therefore, the main purpose of this research is, *to come up with comparative analysis of the mobile phone usage in women entrepreneurs using activity and gender theories in Kenya and Uganda.*

2.3 Gender Theory and Women Entrepreneurs

Gender theory is relevant to this study because it illustrates how women are marginalized in information communication technologies (ICTs) and economic development discourse. Gender theory advocates for promotion of human rights for the marginalized groups in society, by sex, age and race [21]. Gender has been theorized into different contexts by different feminist philosophers [43]. Gender can be seen as the sexual division of labor. Gender can also be seen as the meaning to which people attach and organize social activity and lastly, gender can be seen on a personal or individual [43]. Both gender and ICTs have redefined and negotiated with dynamic changes brought on by time, and therefore can not hold one static definitions [43].

Feminist analysis has paved the way in offering a corrective to gender blindness in the development of ICTs. Research investigations on the adoption, diffusion and impact of ICTs must recognize the gender relations found in society as whole [43]. In addition, Rakow and Navarro [31] asserted that there are gender differences in the way mobile phones are purchased and are made use of. For example, when the mobile phone was first introduced in Uganda and Kenya in the early 1990s, women mostly used the calling service to maintain their relationships with their husbands and taking care of their families. Therefore, men generally believed that women required mobile phones habitually for security reasons [31].

The theoretical aspects in the gender theory then, shows that gender dynamics play a crucial role when it comes to the study of women entrepreneurs. In this research gender theory gives insights by shading light on the following:

- Gender theory suggests that equal access to resources, ICTs inclusive lead to economic development. From a gender theory of viewpoint, communication technologies such as the mobile phone can increase women's emancipation in the economy, if they have equitable access to mobile phone services and maximize their use.

- Gender theory deals with gendered use of ICTs, including the mobile phone. It proves to be of significance when it comes on investigating the research question on the benefits derived from mobile phone usage in women entrepreneurs in Uganda and Kenya. More so, gender theory aims to correct gender blindness in ICTs usage and women entrepreneurships.
- Lastly, gender theory hypothesizes that women are more often than not the last actors to benefit from ICTs as an economic resource in society. This hypothesis helps to deal with the research question as to what are the challenges women entrepreneurs face in using mobile phone services in Uganda and Kenya.

2.5 Activity theory and the mobile phone.

Activity theory (AT) was developed by the Russian Psychologists and incorporates different Psychological, developmental, educational and cultural approaches [42][40]. The activity theory is a framework for enhanced understanding actors' activities within social, economic and organizational contexts, attempting to link actors actions within the relevant contextual elements [16]. The framework has been used in different areas including enterprise engineering [36], learning Kozmin *et al* [28] to mention but a few. Activity theory is relevant to this study because its principles can be applied to analyze problems of human computer interaction and the mobile phone usage is not an exception. Activity theory in this study will help to understand how ICTs are used in the context of real activity. The theory enables analyzing the features that manipulate the performance of an activity by a subject, using artifacts, subject to certain rules, and divided among members of the community to act in specific roles, to accomplish object and ultimately an outcome that influences the organization (Parks, 2000). Figure 1 depicts the activity theory adopted from Engestrom [16].

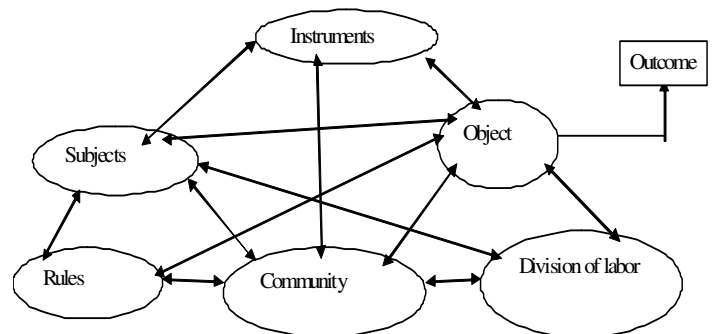


Figure1: Components of the activity theory

- The subject is the actor or group whose belief is adopted.
- Object is the raw material at which the activity is directed and transformed into outcomes with the help of instruments or tools.



- Tools mediate the object of an activity. They can be external, material (for example a mobile phone, a computer, a textbook) or internal (language, mobile Phone services). Tools (mobile phones) assist in the transformation of the object into the desired or expected outcome.
- Community refers to the participants of an activity who share the same object.
- The division of labor (types of businesses) involves the division of tasks and roles among actors of the community and the separations of power and status.
- Rules or regulations are explicit and implicit norms that regulate actions and interactions within the system [16].

Activity theory has been understood as a body of knowledge for assessing social economic issues in a given environment. However, the theory is universal and gender blind. This research adapts activity theory to conceptualize how women entrepreneurs in Uganda and Kenya interact with the mobile phone to perform business transactions in a networked environment. The activity (what entrepreneurs do) which is the form of doing that comprises many social actions. Actions are undertaken by actors (subjects) who are motivated towards achieving the stated aim. The object (purpose of using the mobile phone) is transformed by entrepreneurs (subjects) to motivate and achieve the goals of activity. This is mediated by tools (artifacts or mobile phone) in collaboration with a networked computer and others in the business environment (community). The activities in the business environment are guided by rules to mediate cooperation within and participation of the subject in the business environment or community.

The theoretical aspects in the activity theory then, shows that activity principles play a crucial role when it comes to the study of women's entrepreneurship and the mobile phone usage. In this research activity theory gives insight by shading light on the following:

- In the context of ICTs usage, activity theory allows us to move away from ICTs as the focus of interest to understanding of ICTs as an element of the large scope of human activities [26]. Activity theory is a significant measure to analyze the activity of an organization that involves the mobile phone usage [25]. Inhere, the researcher focus on the structure of the actor's activities to the extent to which mobile phone facilitates or constrains attaining the actors' motive or object, and the impact of technology on achieving the desired or intended outcome.
- As noticed from activity theory, the mobile phone and other embedded ICTs are simply tools for mediating the interaction of women entrepreneurs within the business community. It is urged that activity theory can facilitate understanding of how technology advances and penetration influence change and how mobile phones lead to developmental transformation, and in this paper, the focus is on mobile phone diffusion in women entrepreneurs.

3. RESEARCH APPROACH

Triangulation method was used to study mobile phone usage in women enterprises' business processes and to examine the benefits of its use on enterprise performance. Cohen and Manion [9] recognizes mixed method as having the ability to give room for probing for in-depth information, discovering new ideas and simultaneously generating information on emerging concerns on the line of thought. Therefore, triangulation approach was considered the most appropriate. Because as Cohen and Manion [9] suggests, a triangulation approach describes the existing conditions, and actors behavior through observations and interpretation, and this is what this research intended to do. Based on Cohen and Manion [9], the suitability of trigulation research approach for this study rests on the fact that human beings (women entrepreneurs) live by interpreting phenomenon around them.

This study was carried out in Kampala, Uganda and Nairobi, Kenya. In Uganda the study concentrated in Kampala and Ibanda. Kampala is the capital city of Uganda and represented urban women entrepreneurs while Ibanda represented rural women. Nairobi is the capital city of Kenya and the study area was Wetlands, which lies in the central region of Kenya. It comprises of different markets and has good representation of both rural and urban population of female entrepreneurs. We selected Maasi market because of its convenience and female deal in shoes and beads, then, Parklands market for groceries and lastly the Village market because it had women from different ethnic backgrounds. The population of this study was composed of women entrepreneurs who owned mobile phones. The study sample was reached as follows:

- Selection of study countries: Uganda and Kenya were randomly selected out of the five developing countries in East African Region.
- Selection of study districts: Kampala, Ibanda and Nairobi city were purposively selected on the basis that the research participants for the study had experience in the phenomenon.
- Selection of sample size in Uganda: Multistage sampling was employed to come up with 200 participants in Kampala and 80 in Ibanda. Focus group discussions were conducted both in Kampala and Ibanda with 20 participants each. Further more; convenience sampling was used in Kenya to select 100 women participants. According to Roscoe's [33] rule of thumb, a sample size between 30 and 500 is sufficient for most studies. A sample of 100 participants is convincing enough as a true representative of the population. Like wise, it is in conformity with Bailey [1994] who stated that a sample size of 100 participants is efficient. More so, 20 respondents were interviewed by the researcher.



Questionnaires, focus group discussions, and face to face interviews were used for data collection during this phenomenological study. In order to ensure that the questionnaires and interview guide were clear, unbiased, and likely to yield the information sought in this research, the researcher pilot tested the research tools. Academicians in the Netherlands and Uganda were selected to review the questionnaires and interview guides. The research tools were refined to capture useful data from field studies. Data generated from the field studies were recorded and analyzed using SPSS.

4. RESULTS

The analysis covered a comparative analysis of activity theory principal's on the mobile phone usage in women entrepreneurs. The mobile phone was found out to be the means which mediate relations between activities in the value chain.

4.1 Subjects (Women entrepreneurs)

The results showed that the age of entrepreneurs influenced the usage of the mobile phone. The age group of 15-29 and 30-44 are the cohorts that mostly used the mobile phone in Uganda and Kenya. This is in line with Mpogole et al (2011) findings in Tanzania. In addition, this is in agreement with Reynolds *et al* [34] findings, which revealed that people between age of 25 and 44 are most likely to own mobile phones. When one considers the level of education, virtually more than 75% of women entrepreneurs were literate. Reasons that would have contributed to higher literacy rates in this sector include lack of employment opportunities for university graduates, career dissatisfaction, desire to control and be independent and to integrate work and family to increase their income. About 31.8% of Ugandans had diplomas and above compared with 28.6% Kenyans, while 21.8% Ugandans had 12 years of education (secondary) compared with 48% Kenyans Only 26% Ugandans and 8.2% Kenyans had not completed primary level. This disagrees with the common belief that the business sector has a large percentage of illiterate women.

Table1: Subject Characteristics

	Variable	Category	Percentage	
			Uganda	Kenya
A	Age	15-29	43.5	37
		30-44	40.8	46
		45-59	14.3	15
		60 and above	1.4	2
B	Education Level	Less than Primary level	26	8.2
		Completed Primary	20.4	14.3
		Completed Secondary	21.8	49
		Completed Diploma/ Degree and above	31.8	28.6
C	Type of Business	Micro Enterprises	82.9	84.7
		Small Enterprises	11.8	15.3
		Medium Enterprises	5.4	0

4.3: Division of Labor or Categories of Women enterprises studied

Entrepreneurs (subjects) operate within the community; they share the responsibility for the achievement of the object (Profits and other outcomes). This is realized through division of labor. The

division of labor consisted of micro, small and medium enterprises. The majority of women enterprises under the study in Kenya dealt in agricultural products (38.1%) compared to 18.2 % in Uganda (see Chart1). In Kenya, women dealt more in perishables crops such as fresh fruits, vegetables, and banana while in Ugandan women concentrated in trading of textiles.

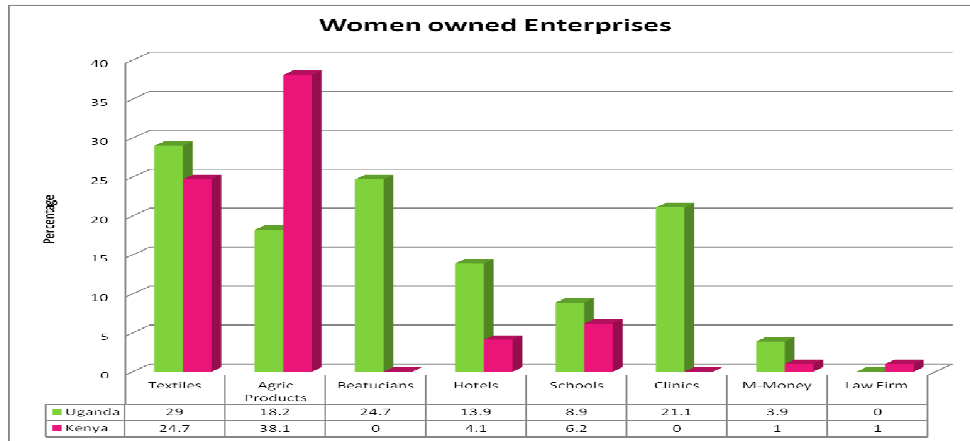


Chart 1: Women owned Enterprises

4.4 Operations performed by Women Entrepreneurs in Uganda and Kenya

The operations are performed by the mobile phone. These operations are performed to carry out an action. SMS and voice calling were common operations used in women enterprises in Uganda and Kenya (See Chart 2). Forty five percent of Ugandans reported using SMS and voice calling to transact their business while Kenyans used 59% of voice calling and 29% of SMS. Through interviews, Patience in Kenya revealed that; *“it is only voice calling, SMS and beeping I use most of the time. When I beep or flash a friend, she knows I have a business deal to communicate.* Further more, women confirmed that the growth in SMS usage was attributed to increased usage campaigns by mobile phone operators especially the use of M- Money in both countries. Where money is transferred via text and the actor at the far end can cash it in at any mobile money agent. The use of mobile money has created and continues to create a micro- economy in urban and rural areas. The MTN mobile money, ZAP, Warid Pesa, M-sente, and M-Pesa each used to pay for transacted goods and services, water and electricity bills, school fees, parking tickets, loan repayments from Micro finance institutions and others.

On the contrary, mobile mails were used in Kenya (2%) only, an indication that it was a new innovative service that Ugandan women entrepreneurs are not yet aware of. Therefore this research suggests an intensive sensitization of users by service providers in Kenya and Uganda.

4.4 Reasons for using Artefacts in Women Enterprises

Regardless of the selective portion of money invested in mobile phone, certain stimuli exist that encourage and push women entrepreneurs to invest in mobile phone services. The main driving force for investment was found out to be convenience. Mobile money enterprises in both countries confirmed that the most stimuli for purchasing mobile phones was convenience with 100% (See Chart 3), next was schools in Kenya (95%), agricultural firms in Kenya (67%) and then beauticians in Uganda (56%). However, multiple calls, messages and missed call alerts created confusion which meant lost sales and frustrated customers. It was explored hat there was an urgent need to design a client innovation that can reduce the confusion.

In turn, communication was also mentioned as a reason why women entrepreneurs purchased the mobile phone. This was seen in clinics (70%) and Textiles (62%) in Kenya compared to 50% of agricultural enterprises in Uganda who agreed to the statement. On the issue of mobility, respondents agreed that, the power and functioning of women enterprises is always at hand with mobile phones. For example Winfred a lawyer in Kenya can track billable time (time worked) while Lillian in Kampala, Uganda can order textiles from Nairobi any where any time, just as she could if she was at her shop.

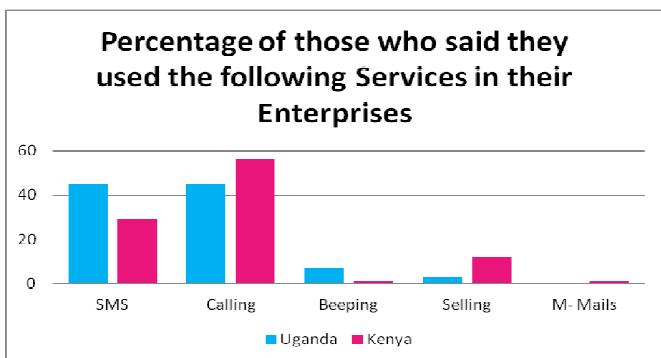


Chart 2: Popular Mobile Phone services used

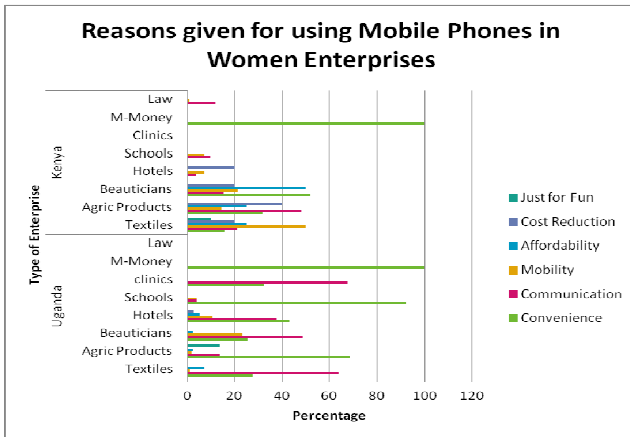


Chart 3: Reasons given for using Mobile Phones in Women Enterprises

4.5 Outcomes of the mobile phone usage in women entrepreneurs.

The motive of business transaction (activity) is in its shared object, in what the object transforms into during the activity, which the outcome (benefits) of mobile phone usage. Women engage in business in order to earn profits. The mobile phone mediates activities in the community to enable women entrepreneurs increase their profits. It was observed that women enterprises that invested in mobile phone services generated high revenues (See Chart 4). In Kenya, 92.6% agreed that the use of mobile phone increased their turnover compared to 54.6% of women enterprises in Uganda. This finding implies that Kenyans are more informed and aware of mobile phone services (mobile money, emails, SMS,) compared to Ugandans.

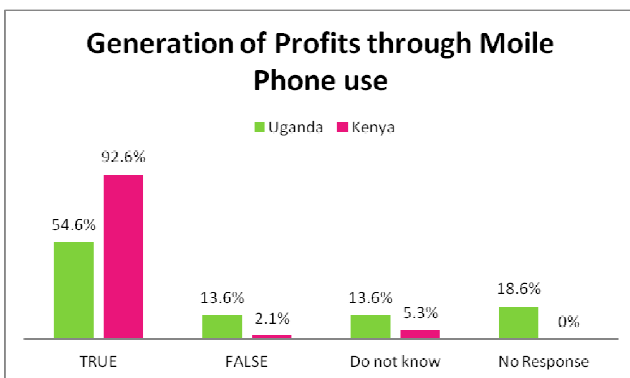


Chart 4: Respondents perception on generation of Profits

This is in line with Jensen [20] findings on fishermen in Kerala state in India, where it was observed that mobile phone usage increased fishermen profits and consumer welfare by reducing price variation in different markets. On the other hand, Ugandans had mixed feelings on revenue generated from mobile phones. More than 45% refuted to the statement.

This implied that, women entrepreneurs are not yet aware as to how mobile phone usage could increase the flow of information among businesses actors in the value chain. More so, the results suggested that evidence on increased profits had started to emerge in enterprises and needed further investigations.

Similarly in Uganda and Kenya, respondents agreed that increased profits were attained through business networking; cheaper communication, reduced transport, service delivery and immediacy (See Chart 5). Business networking increased communication with customers that assisted women entrepreneurs to bring new customers or suppliers in the transaction chain. This concurs with Donner and Escobari [13] findings from a review of 14 studies, where it was argued that mobile phone brought more customers and supplies in the value chain through cheaper communication.

Furthermore, it was confirmed by respondents that mobile phone usage reduced transaction costs. Respondents argued that information flows between actors in the value chain allowed and continue to allow for the exchange of information without travelling. However, there is still a mixed picture in which some journeys can not be substituted with mobile phone usage [28]. Julian, a business woman who deals in textiles in Kampala had this to say; *indeed, mobile phones have reduced transaction costs but sometimes I have to travel in order to get good quality products*”, Akoth, a Kenyan grocer in Parkland market, reported that mobile money (M-Pesa) had substituted for long journeys. *“I use mobile money to pay for goods without travelling to the point of sale, I can receive money from debtors, send money to my family, pay school fees for my children and clear utility bills while at work but I have to travel to purchase vegetables from suppliers”*. This implies that, face to face interaction still plays a crucial role in business transaction process. Physical inspection of goods remains important in developing countries where regulatory laws are still being formulated.

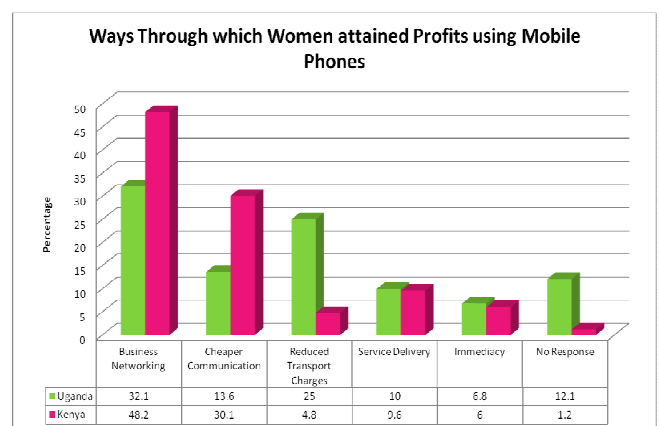


Chart 5: Reasons provided for using mobile phone



4.6 Enterprise Productivity

Relevant and timely information attained through mobile phone use helped eliminate middlemen, thereby increasing the number of customers in the transaction chain of women entrepreneurs (See Chart 6). This implies that mobile phone use in women entrepreneurs increased productivity in both Kenya and Uganda. Sixty three percent of Ugandans agreed that mobile phone usage reduced business intermediaries (63.9%), while 55 % Kenyan women entrepreneurs supported the statement. These findings add to emerging evidence that mobile phone usage eliminates middlemen. This contradicts previous research findings by Jagun *et al* [19] [2][28]. Their research findings, found out that mobile phone usage permitted intermediaries to perform their business activities effectively. However, since this research studied two countries, more studies to examine middlemen roles in different sectors and countries may yield rich research findings. Thus, there has been a reduction of intermediaries in the value chain but not complete elimination.

More so, women entrepreneurs gained more customers through business networking (See Chart 6). Entrepreneurs were able to reach their business any time any where, appointments and orders were made over the phone, increased networks and business publicity and advertisements displayed phone numbers of various clients. This is consistent with Abraham [1] and Jensen [20] findings in the fish industry in India, where entrepreneurs used mobile SMS messages to gain buyers and sellers. Similarly in Niger, entrepreneurs used mobile phones to find markets for their grains [2]. Likewise, Soutel *et al* [37] in their studies from community and business survey’s in South Africa, Tanzania and Egypt revealed similar results. Ugandan women entrepreneurs, 32% on the other hand felt that mobile phones did not assist in acquiring more customers. This concurs with Donner [10] findings in Hyderabad–India. Who found out that mobile phone usage was less useful in acquiring and retaining customers in the value chain. Thus, more detailed comparative studies still lacks to provide hard evidence on customer acquisition and retention in the different sectors, countries, developed and developing nations could yield better results

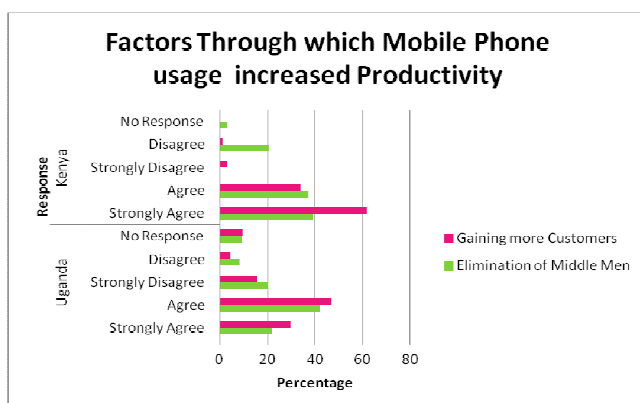


Chart 6: Factors which increased Productivity in Women Enterprises

4.7 Price and Marketing Outcomes

Chart 7 provides suggestive evidence of the resulting efficiency in market prices and performance. Eighty five percent of entrepreneurs stated that mobile phones are useful when they need to purchase and negotiate prices of goods and services: “within three minutes, I am able to make five calls and choose the cheapest and decide when to get the goods”, said Immaculate, while Janet stated that: “I call suppliers in Dubai; when in Kampala city while continuing with my business transactions....I can talk and agree on the price of goods and services. At the end I save about 605 USD on flight charge and time. Sincerely, mobile phones speed up transactions and help us achieve better prices”.

Women entrepreneurs who dealt in agricultural products especially groceries in Kampala and Nairobi stated that in the past we had to travel to different village farms and markets to search for suitable suppliers for our products. But, with the use of the mobile phone it has been made easier. “I talk directly with my suppliers from Nakasero, Kasubi, Owino and Kalerwe markets about prices of perishables in the evening before they deliver my order in the morning. I then compare market prices and usually choose the cheapest supplier”. Says; Florence, a grocery vendor in Wadegeya. This implies that mobile phones enable women to reduce price variations, increases market efficiency and income of women entrepreneurs. More so, they do not need to move from market to market in search for better market prices.

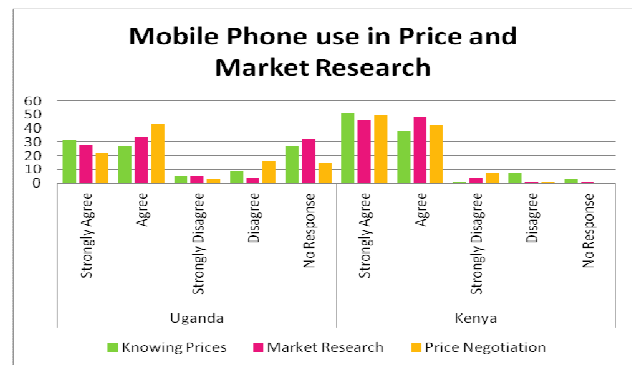


Chart 7: Mobile phone use in Price and Marketing

This concurs with Jensen [20] findings in India among fishermen. Fishermen with mobile phones helped them to call potential buyers who would in turn search for other buyers in various markets before they could decide where to sell their catch. Another research conducted in Tanzania on fishermen established that mobile phones increased their bargaining power and market opportunities [24]. Likewise, Aker [2] found out that grain traders with mobile phones were able to secure more customers and to sell in various markets. Similar studies were conducted in a weaving sector in Nigeria (Jugun *et al* [19]).



This case study proved that weavers that owned mobile phones were able to place and receive several orders compared to their counterparts who did not have. In Tanzania mobile phones were used to hire and negotiate prices of tractors by farmers in Bahati district [7]. In turn, mobiles helped to reduce risks in case farmers faced problems with the tractor in the farms.

4.8 Enterprise Transformation

The main drivers of business transformation were improved business processes, increased competition, increased performance and new business opportunities (See Chart 8). There was strong evidence that mobile phones usage in women entrepreneurs facilitated competitive advantage both in Uganda and Kenya. More than 75% reported that mobile phone usage enabled them to place and receive orders from suppliers compared to 95% respondents in Kenya. This agrees with previous findings in Aso oke, a weaving industry in Nigeria. Where, weavers used mobile phones to place orders (Jagun *et al*[19]). Further more, they argued that traders without mobile phones lost orders to the haves.

More of respondents were able to access and use new business opportunities offered by mobile phone service provides. These included; Mobile money, internet, emails and others. For example with the use of mobile money, 72% of Ugandans compared to 91% Kenyans reported using it to do other business like money transfer, selling air time and mobile money banking that increased their income.

Another enterprise transformation enabler not yet much reported in discussion of enterprises and mobile phones was improved business processes. It was found out that mobile phones increased the speed of communication, and reduced the cost of information in the value chain. Further more, mobile phones delivered real time information that enabled women entrepreneurs to make just in time decisions. In turn this speeds up business transactions hence improved enterprise processes.

One further enterprise transformative factor was increased market performance. This was gained through commodity searches using service providers menu. Respondents confirmed that by browsing through a list of commodities, they were able to find availability and price of goods in different markets, reduced brokers' exploitation, and reduced the information gaps between the rural and urban women entrepreneurs.

4.9 Challenges of Mobile Phone Usage in Women Enterprises

Coupled with explosive growth and diffusion of mobile phones in women enterprises, users experienced serious challenges. The biggest challenge faced by Ugandans was, buying airtime (33.9%) and network failure (13.9%). Similarly, Kenyans reported network failures (51.9% and network trafficking (22.2%) as major problems. Like elsewhere in the world, problems faced by mobile phone users are almost similar.

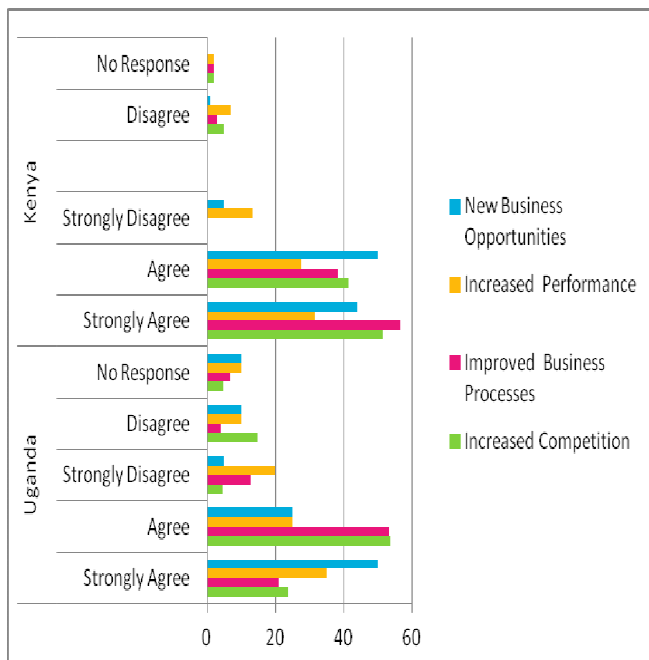


Chart 8: Factors that influenced Enterprise Transformation through Mobile Phone Use

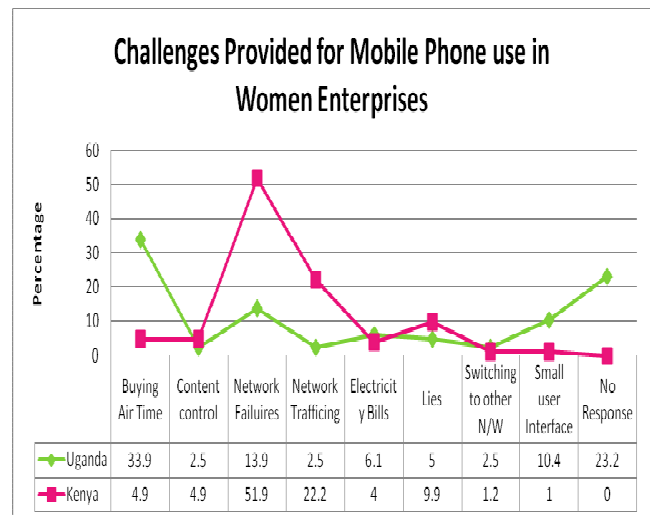


Chart 9: Challenges face by Women Entrepreneurs through Mobile Phone Use



5. DISCUSSION

The main contribution of this paper is to apply the basic principles of AT for analyzing mobile phone usage in women entrepreneurs. The results are presented in the gender based theoretical framework in figure 2. Transacting was found out to be an activity in women enterprises and information accessed through mobile phones impacted on the business activity to produce outcomes. While mobile communication was an action which is mediated by means of coordination and communication using the mobile phone. The major aim of an entrepreneur is to maximize profits and minimize costs. For an entrepreneur to achieve her objectives she has to secure products, knowledge and experiences and this is through mobile communication. The mobile phone was the means by which women entrepreneurs acted upon the object, and the means which mediated the relationship between women entrepreneurs and other actors in the community. The networked social-economic environment was made up of the community, government, subjects and division of labor. The subjects operate within the community with the desired aim of achieving the object.

The community is the business environment in which women entrepreneurs operate. The study showed that there were noteworthy differences in the utilization of the mobile phone services between rural and urban women entrepreneurs of Kenya and Uganda. The second element of the networked social-economic environment is the subject which involves women enterprises in the study. The third one is the government which sets ICT policies to guide actors in their value chain. The rules and regulations are made by the government through the communication commission of Uganda and Kenya respectively. The ruling government is the regulator of mobile phones and controls subjects on mobile phone usage. Finally the fourth element was the division of labor. This included all types of women enterprises. It was found out that women entrepreneurs operated micro and small enterprises, which belong to the informal sector. The MSEs included: Textiles, agricultural, beauticians, mobile banking and hotels. Therefore, mobile transacting in MSEs is then mediated by mobile phones, networks, ICT policy documents which are used as artefacts that are considered in relation to ICT policies of the governed country.

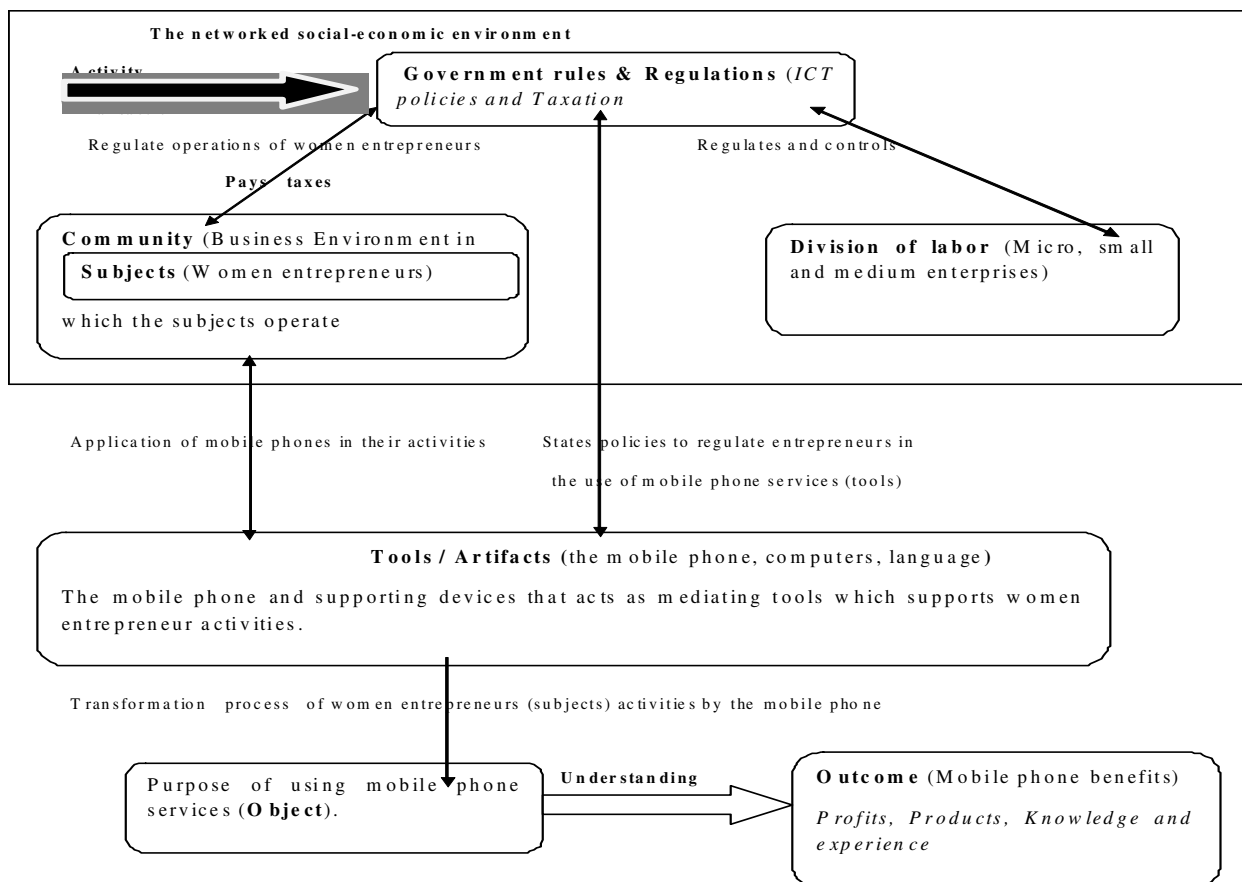


Figure 2: Activity Theory – Based Assessment of Mobile Interaction on Women Entrepreneur Activities



6. CONCLUSION AND RECOMMENDATIONS

Activity theory principles provided insights to the researcher into how enterprise transformation may occur with the mobile phone usage in women enterprises. The current mobile phone usage in business transactions suffers from lack of gender based theoretical frameworks to accumulate knowledge in the enterprise domain. The paper makes a step towards developing a gender based theoretical framework for mobile phone usage in business enterprises. The usage of mobile phones in women enterprises have lessened and continues to lessen down the magnitude of size, space and time in the enterprise sector. If mobile phones are smartly used, they hold great promise in helping the growth of mobile commerce in developing countries that majority can afford to use. Mobile phone usage had transformed women enterprise, reduced intermediaries, increased productivity and improved business processes.

The experience gained during field studies laid the ground work for giving some recommendations on how mobile phone use can benefit women enterprises. The following recommendations were made:

1. The government of Kenya and Uganda should assist in reducing down the price of air time. Air time is one of the constraints to using mobile phones in women enterprises. During focus group discussions and interviews, respondents expressed discontent with the cost of air time (Also see Chart 9).
2. Awareness campaigns need quick attention. Efforts should be made by governments and service providers to ensure women entrepreneurs are made a ware of new applications and innovative services that are of use to the business sector. Governments should encourage television, and radio advertisements of new application. Further more, mobile alerts should be sent to every subscriber explaining how these new innovations can help women entrepreneurs to improve mobile commerce.
3. In addition sensitization seminars and courses on mobile phones in intuitions of learning should be enforced. Though some institutions of higher learning have of recent started training course in mobile applications and services, more efforts should concentrate on mobile phone usage in all development sectors. Through media advertisements (televisions, radios, newspapers, billboards and others), service providers need to educate the women entrepreneurs and the public at large on third generation mobile phones (3Gs), blackberries, mobile modems that provide access to internet, and free mobile phone internet of 6 gigabits which is a human right for every actor who owns the mobile phone.

4. To sum up, government support is needed to develop sound business models, foster skills through establishment of software incubation centers in universities, and to ensure that the infrastructure is in place and affordable. Further more, governments need to make more bandwidth available for broadband usage to manage impending data deluge, which threatens to swamp mobile broadband networks.

This study provides a baseline against which countries can assess their incremental gains, analyze demand for mobile applications and develop policies and strategies that are responsive to women entrepreneurs, empowering all the actors with the benefits of effective participation in the information era. Further research effort could be made using a larger sample from different developed and developing counties before any generalization could be made. The study focused on women entrepreneurs, hence further studies in male owned enterprises could help to reveal the effects of mobile phone use on income, enterprise transformation, business processes and productivity. Also, the demographic characteristics of male could help to demonstrate how age, gender, education, and others may perhaps influence entrepreneur's perceptions on mobile phone usage. It is important ant to bear in mind that women and men entrepreneurs are likely to differ in their motivation for mobile phone usage. In addition, this study applied activity and gender theories to study mobile phone usage and its benefits in women entrepreneurs, application of different theories could yield better results. Further studies could focus on the development of business value models.

REFERENCES

- [1] Abraham. R. (2007). Mobile phones and Economic Development: Evidence from the Fishing Industry in India. Information Technologies and International Development Volume 4 (1) PP.
- [2] Aker Jenny C (2008). "Does Digital Divide or Provide? The Impact of Mobile Phones on Grain Markets in Niger" BREAD Working Paper 177.
- [3] Aker and Mbiti (2010). Aker Jenny C and Mbiti M.Isaac. (2010). Mobile Phones and Economic Development in Africa. Journal of Economic Perspectives. Volume 24. 207-232.
- [4] Aneele B, Shaw J and Vicziany. (2008): Mobile Phone access and usage among Female Micro Entrepreneurs in Bombay City Today. 17th Biennial Conference of the Asian Studies Association of Australia in Melbourne
- [5] Asheeta .B, Rowena W. W. C, Subramaniam. J and Silarszky. P. (2008): The role of mobile phones in sustainable rural development: ICT Policy Division. Global Information and Communications Department.
- [6] Bellamy, R. (1996): Designing Educational Technology: Computer - mediated Change. In B. Nardi (Ed.), Context and consciousness: Activity Theory and Human-Computer Interaction (123-145)., Cambridge: The MIT press.
- [7] Bjorn .F. and Mototay.E. (2011): The Developmental Contribution from Mobile Phones across the Agricultural



- Value Chain in Rural Africa. *The Electronic Journal of Information Systems in Developing Countries*, 48 (7), 1-16.
- [8] Communication Commission of Kenya (CCK). (2011): The Communication Commission of Kenya. Available at, http://www.cck.go.ke/news/2012/mobile_subscribers.html, 9th July 2012.
- [9] Cohen. L. and Manion. L. (2000): *Research Methods in Education*. Routledge, 5th Edition.
- [10] Donner Jonathan. (2005): *Micro Entrepreneurs and Mobiles: An Exploration of the uses of Mobile Phones by Small Business Owners in Rwanda*. The Massachusetts Institute of Technology, *Information Technologies and International Development*. Volume 2 No.1-21.
- [11] Donner Jonathan. (2006): The use of mobile Phones by micro entrepreneurs in Kigali, Rwanda: Changes to social and business networks. *Information Technologies and International Development*, 3 (2), 17-28.
- [12] Donener Jonathan. (2007): The Use of Mobile Phones by Micro entrepreneurs in Kigali, Rwanda: Changes to Social and Business Networks. The Massachusetts Institute of Technology, *Information Technologies and International Development*, Volume 3, Number 2, winter, 2006, 3-9.
- [13] Donner Jonathan and Escobari Marcela (2010): A review of the Research on Mobile Phone use by Micro and Small Enterprises. ICTD2009.
- [14] Duncombe, R. (2010): *Mobiles for Development Research: Quality and Impact*. The 2nd International Conference on M4D –Mobile communication technology for Development, Kampala, Uganda.
- [15] The Economists (2010): worth a Hill of Soyabeans - how the internet can make Agricultural Markets in the Developing World more efficient. Available at, <http://www.economist.com/node/15211578>. Accessed on 27th March, 2012.
- [16] Engestron, Y. (1978): *Learning by Expanding: An Activity – Theoretical approach to Development Research*: Helsinki: Orienta-Konsultit.
- [17] Elena B. C.M Blackden, J.C. Guzman. (2009): *Gender, Entrepreneurship, and competitiveness in Africa*. The World Bank
- [18] Esselaar .S. Stork.C. Ndiwalana. A. and Deen-Swarra. M. (2007): *ICT Usage and its impact on profitability of SMSEs in 13 countries*, *Information Technologies and International Development*, 4 (1), 87-100.
- [19] Jagun Abi, Richard Heeks and Jason Whalley (2007). *Mobile telephony and developing country Micro- Enterprise: A Nigerian case study*, Development Informatics group, Institute for development policy and Management, Paper no. 29, University of Manchester, UK, pp 2-23.
- [20] Jensen Robert. (2007): *the Digital Provide: Information Technology, Market Performance and Welfare in the South Indian Fisheries Sector*. The quarterly Journal of Economics. Volume 122, issue 3. PP. 879 to 924
- [21] Mazrui, A.A. (1992): *the Black Woman and the Problem of Gender: an African Experience*: *Research in African Literature* 23: 87-105.
- [22] Molony, T. (2006): “I do not trust the phone; it always lies”: *Trust and Information Communication Technologies in Tanzanian Micro and Small Enterprises*. *Information Technologies and International Development*, 3 (4): 67-83.
- [23] Mpogole, Usanga, H and Tedre M. (2010): *Mobile Phones and Poverty Alleviation: A Survey Study in Rural Tanzania*.
- [24] Myhr .Jand Nordstrom, L. (2006): *Livelihood Changes Enabled by Mobile Phones. The Case of Tanzanian Fishermen*, Bachelor Thesis, Department of Business Studies, Uppsala University, Sweden.
- [25] Kaptelinin, V (1996): *Computer –Mediated Activity: Functional organs in social and Developmental Contexts. Context and Consciousness: Activity Theory and Human-Computer Interaction*. In B.A. Nardi. Cambridge, MA, The MIT Press: 17-44.
- [26] Kaptelinin .V. and Nardi.B.A. (2006): *Acting with technology: activity theory and interaction design* Cambridge, MA: MIT Press.
- [27] Killian, F. (2011): *Africa’s Mobile Economic Revolution*. Available at, <http://www.guardian.co.uk/technology/2011/jul/24/mobile-phones-africa-microfinance-farming>, Accessed on 1st March 2012.
- [28] Kouzmin, A, Loffler, E., Klages., H., Korec-Kakabadse N. (1999): *Benchmarking and Performance Measurements in Public sectors: Towards learning for agency effectiveness*. *International Journal of Public Sector Management*. 12 (2).
- [29] Overa .R. (2006): *Networks, distance and trust: Telecommunications development and changing trading practices in Ghana*. *World Development* Vol.34.no.7, 1301 – 1315.
- [30] Parks, S. (2000): *Same Task, Different Activities: Issues of Investment, Identity and use of Strategy*. *TESL Canada Journal*, 17 (2), 64-88.
- [31] Rakow, LF & Navaro N. (1993): *Remote Mothering and the Parallel Shift: Women meet the Cellular Telephone: Critical Studies in Mass Communication* 10: 44 -157.
- [32] Rao,M.(2011) *Mobile Africa Report 2011*. Mobile Monday: Available at, http://www.mobilemoney.net/reports.MobileFrica_2011.pdf. Accessed on February 24th, 2012
- [33] Rosco. J.T (1975). *Fundamental Research Statistics for the Behavioural Sciences*. 2rd Edition, New York: Holt Rinchart and Winston.
- [34] Reynolds .PD. WD. Bygrave. E Autio. LW. Cox and M. Hay. (2003): *Global Entrepreneurship Monitor 2002*. Executive Report, Babson College / Ewing Marion Kauffman foundation: London Business School.
- [35] Salia , M, Nsowah, N.N.N and Steel,W. F. (2011): *Effects of Mobile Phone use on Artisanal Fishing Market Efficiency and Livelihoods in Ghana*. *The Electronic Journal of Information Systems in Developing Countries*, 47, 6, 1-12.
- [36] Schellong, A (2009): *EU e-Government Bulldozer: Beyond Measuring Tread Marks*. *Journal of Measuring Business Excellence* 11(4) 9-22.



- [37] Soutel, D., Scott, N., Garforth C., Jain R., Mascarenhas O and McKemey, K. (2005): The Economic Impact of Telecommunications on Rural Livelihoods and Poverty Reduction: A study of rural communities in India, Mozambique and Tanzania. Commonwealth Telecommunications Organization for UK Department for International Development. Available at, http://www.telafrica.org/R834/files/pdfs/final_report.pdf.
- [38] UCC. (2012): Uganda Communication Commission. Available at, <http://www.ucc.co.ug>. Accessed on 14th April, 2012.
- [39] International Telecommunication Union (ITU). (2011): Statistics Database, Available at, <http://www.itu.int/ITU-D/ICTEYE/indicators/indicators.asp#>. Accessed on 5th May, 2012.
- [40] Leontiev, A. N. (1978): Activity Consciousness, and Personality: Englewood Cliffs: Prentice-Hall.
- [41] Latondo, K. (2010). Mobile Phones and Electronic Commerce in Micro and Small enterprises. An Empirical investigation in Nairobi. A Doctoral thesis submitted in fulfillment of the Doctor of Philosophy in the School of Business- University of Nairobi.
- [42] Vygotsky, L. S. (1978): Mind in Society: The Development of Higher Psychological Processes. Compiled from several sources and edited by Cole, V. John-Steiner and S. Scribner, Harvard, MA: Harvard University Press.
- [43] Webster, J. (1995): What do we know about gender and Information technology at work: A discussion of selected feminist research: The European Journal of women's Studies: 2:325-334.

Engineering (S&EE) research group of CIT; the Enterprise Engineering (EE) research network; and the Group Decision and Negotiation (GDN) research group. Josephine is also a Professional member of the Association of Computing Machinery (ACM), and a Program Committee member for several journals and conferences such as CEJCS, IJCIR, GDN, HICSS, ECIS, PRET, and ICCIR among others. Josephine is a member of the Makerere University Senate and serves on the: University Council Committee of Quality Assurance, Gender and ICT; Academic Board of the College of Engineering, Design Art and Technology; and Board of Research and Graduate Training. She is also a member of the Global Engineering Deans' Council (GEDC).

Before joining Makerere University in 2002, Josephine worked as a Senior Information Scientist for the Resource Centre of the Uganda Ministry of Health in 2000 – 2001. From the Ministry, she joined the Institute of Computer Science (ICS) as an Assistant Lecturer and also served as the Research Coordinator till 2004 prior to embarking on her doctorate journey. On return, she served as the Head of Information Technology Department in the Faculty of Computing and Information Technology (formerly the ICS and now a School) in 2009 – 2010. She lectures and conducts research supervision of graduate students in Information Systems specialty and related fields.

Authors' Briefs

Mary Komunte is a PhD student and Lecturer in Informatics Technology Department, School of Computing and IT, Makerere University. Her main research interests focus on ICT4D, Mobile Technologies and Web Security.
 Email: mkomunte@cit.mak.ac.ug

Agnes Rwashana Semwanga is a lecturer and researcher in the Information Systems Department, School of Computing and IT, Makerere University. Her main research interests focus on the application of ICTs in developing countries, health informatics particularly employing the modeling and simulation.
asemwanga@cit.mak.ac.ug

Dr. Josephine Nabukenya is a Senior Lecturer and Researcher of Information Systems and Dean of the School of Computing and Informatics Technology (CIT), at Makerere University, Uganda. She earned her PhD in Information Systems (Collaboration Engineering) from Radboud University Nijmegen, the Netherlands in 2008. Her research focuses on issues related to Collaboration Engineering; Analysis and Design of Information Flow; Business Process Modeling; Enterprise Engineering and Requirements Engineering. She is a member of the Software and Enterprise