

Information and Communications Technology Adoption and Performance of Tea Processing Companies in Kericho County, Kenya

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Abstract

For many years there has seen a massive change in the management of businesses around the world; this has seen most of them investing more of their funds into Information and communication Technology by allocating a large proportion of their funds towards it. Some organizations have been outsourcing the ICT services at the inception stage as an alternative to in-house development. Companies in both private and public sector have embraced technology so as to improve the productivity and performance. In times of advancement of technology and building of efficient manufacturing industries, handling procurement and tendering processes, ICT solutions are particularly important in regard to effective operation of IT infrastructure as well as management of public finances. The study seeks to assess the application of mobile infrastructure, enterprise resource planning, e-mail services and database management systems on performance of tea processing companies in Kericho County. This research targeted Togat tea processing company with a total of 164 employees, Momul 152, Litein 95 and Chelal, 89. The researcher used Stratified Random Sampling and Systematic Sampling procedures. Data collection was done through Questionnaires and Interview. The data is organized in tables using frequencies and percentages. It was then analyzed using Statistical packages for social science (SPSS) version 22. Data presentation has been done using pie charts and graphs. The outcome from the field study clearly showed that the use of ERP on profitability was excellent to the extent of 40%, 25% of the respondent confirmed that the use was good but a minority of 5% confirmed the contrary i.e. poor. 85% of the respondents supported the fact that the effect of mobile technology on profitability was good was 15 % contested with that. Mobile technology was found to have an excellent impact on the sales. A minority of the respondents stood on the fact that the impact is so poor. More than three quarters of the outcome. The findings implied that, 90% of the respondents confirmed that computers had an impact on profitability.

Key Words: *Information and Communications Technology, Organization Performance, Tea Processing Companies, Kericho County*

1. BACKGROUND OF THE STUDY

Information and Communication Technology (ICT) are technologies dedicated to information storage, processing and communication. ICT constitutes a range of software, hardware, telecommunication and information management technologies, applications and device which are used to create, produce, analyse, process, package, distribute, retrieve, store and transform information (Rao, 2004). According to Beckinkinsale and Ram(2006),

Information and Communication Technology is any communication device or application including radio, television, mobile phones, computers, network hardware and software, satellite systems and so on as well as other associated various services and applications such as video conferencing and e-learning. They added that ICT is any technology which is used to the gathering of information, processing, distribution and use.

ICT has influenced today's business around the world and its application is so widespread (Syed & Mohd 2009) they added that ICT is rapidly changing the global production, work and business methods and trade consumption patterns in between the companies and consumers. According to Chong et al (2001), adoption of the ICT is considered as a way to enable businesses to compete on a global scale with increased efficiency and closer customer and supplier relationship. The empirical studies done by Bartelsman and Doms (2000) Dedrick et al (2003), Brynjolfsson and Yang (1996), Derrick et al (2004) Kohli and Devaraj (2003) and Melville et al (2004) confirms that ICT has a positive impact on the performance of the firm in productivity, profitability, market value and market share terms. Their studies clearly indicate that ICT has some effect on intermediate performance measures which include process efficiency, service quality, cost savings, organization and process flexibility and customer satisfaction. ICT has been characterized as an invaluable platform for any organization's economic growth (Gakuo 2011). Kadakanchi et al (2006) re-affirms that ICT has revolutionized the global economy through changes in different economic activities for it has become a pivot for economic growth. According to Dirks & Wolf (2005), the current business activities are characterized by rapid product innovation, increased use of automation and significant organizational changes in response to new manufacturing and IT.

2. STATEMENT OF THE PROBLEM

Tea is the leading foreign exchange earner contributing about 28% of Kenya's total exports (KTDA Annual Report 2012). Thus, the contribution of the industry to the economy is enormous. Despite this contribution, the industry is characterized by many problems among them delay of green tea leaves from buying centers to the factory. The farmers' dissatisfaction and discontent on services offered by the factory is evident in the emergence of a parallel system where small-scale tea farmers in the area sell green tea leaves directly to brokers of multinational companies from the neighboring Bomet and Sotik Districts. A substantial number of Tea Factories in Kenya, once initiated, are unable to achieve their objectives without any support of ICT capabilities (Daniels & Associates, 2006). Research indicates that quite a number of tea factories lack appropriation of information technologies and that despite the tremendous effort to embed IT in organizational processes, use of ICT in factories is not effective (Lytras *et al*, 2011). In Kenya the number of factories that have so far proved defunct and futile ventures in relation to their objectives is desperately alarming. The situation seems terribly worse when Tea processing companies are put into the spotlight with regard to performance contract normally signed by factories heads every financial year. The overall performance of a factory is a key factor to ascertain the success of performance. This is usually determined by the achievement of organizational objectives and the sustainability of the organization thereafter (Reuben *et al*, 2013). The number of factories initiated by government in various tea growing areas in Kenya forms a worthy spectrum to the curiosity of researchers. This study therefore seeks answers on the ICT adoption and Performance of tea processing companies within Kericho County.

3. STUDY OBJECTIVES

The general objective of this study is to explore information and communication and Technology adoption and performance of tea processing companies, with a particular focus on Kericho County.

Specific objectives were:

1. To determine the effect of mobile applications on performance in tea processing companies in Kericho County.
2. To evaluate the effect of Enterprise resource planning use on the performance of tea processing companies in Kericho County.
3. To establish the impact of electronic mail service on the performance of tea processing companies in Kericho County.
4. To find out how database management systems has affected the performance of tea processing companies in Kericho County.

4. THEORETICAL REVIEW

This research was guided by Technology Acceptance Model (TAM) and Diffusion theory.

4.1 Technology Acceptance Model

Technology Acceptance Model is a theoretical model that explains how users come to accept/adopt and use a technological infrastructure. Original TAM was proposed by Davis in 1989. The model suggests that when a user is presented to a new technology, a number of factors influence their decision regarding how and when they will use it. This includes its perceived usefulness and its perceived ease of use. This model adopts well established causal chain of “beliefs, attitude, intention, actual behavior”, which was developed from the theory of reasoned action by social psychologists. In Davis’s study, two important constructs are identified; perceived usefulness and perceived ease of use. The perceived usefulness (PU) is defined as “the degree to which an individual believes that using a particular system/technology would enhance his/her performance” (Davis, Foxall & Pallister, 2002).

The perceived ease of use (PEU) is defined as “the degree to which an individual believes that using a particular system would be free of physical and mental efforts”. These perceptions predict attitudes toward the system/technology adoption. Then the attitude develops the intentions to use and the intentions cause actual system usage. In many recent studies regarding technology, TAM is adopted extensively. TAM was adopted and showed that it contributes to the prediction of individual usage of technology (Fishbein & Ajzen, 1989). Perceived ease of use of an infrastructure has a direct effect on it perceived usefulness and both determine the consumer's attitude toward use, which leads to behavioural intention to use the system and actual use of the system (Davis et al, 2002; Lu et al. 2003).

4.2 Diffusion of innovation theory

Diffusion of Innovation theory was developed by Roger’s in 1995. Rogers (1995:5) defines diffusion as “the process by which an innovation is communicated through certain infrastructure channels over time among members of a social system”. An innovation, according to Rogers (1983:11), is “an idea, practice, or object that is perceived as new by an

individual or other unit of adoption”. The innovation diffusion model states that an innovation (technology) is passed on from its source to end users through a medium of agents and its diffusion in potential users for the most part dependent on the personal attributes of the individual user. The model assumes that the technology in question is appropriate for use unless hindered by the lack of effective communication (Negatu & Parikh, 1999).

According to Rogers (1983), the four major factors that influence diffusion process include; Innovation itself, Communication, Time and Nature of the social system into which the technology is being introduced (Rogers, 1983). VanAkkeren & Harker, (2003) argues that media and interpersonal contacts provide information that influences a person’s opinion and judgment. The theory comprises four elements: Invention, Diffusion through the social networks, Time and Consequences. Information filters through the networks and depending on the nature of the networks and the roles of its opinion leaders, new innovations are either adopted or rejected. Rogers further claims that there are five adopter categories that include: innovators, early adopters, early majority, late majority, and laggards. Interestingly, the five categories follow a standard deviation curve where very little innovators adopt at the beginning (2.5%), early adopters constituting 13.5%, the early majority constituting 34%, the late majority another 34%, finally the laggards at 16%. Rogers (1995) presented four additional adoption/diffusion theories.

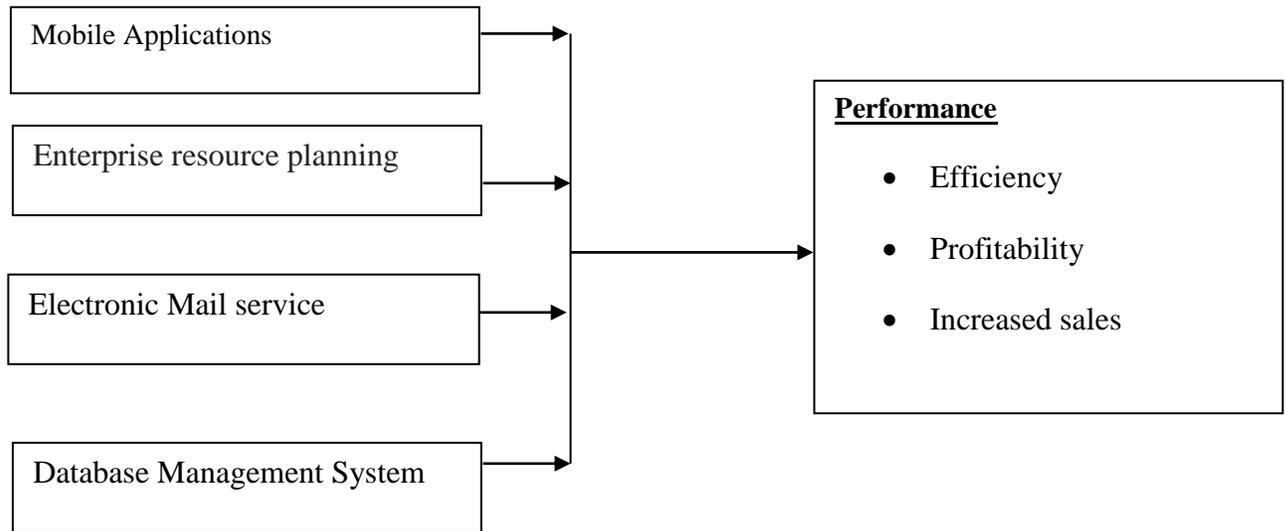
Innovation Decision Process theory. Potential adopters of a technology progress over time through five stages in the diffusion process. First, they must learn about the innovation (knowledge); second, they must be persuaded of the value of the innovation (persuasion); they then must decide to adopt it (decision); the innovation must then be implemented (implementation); and finally, the decision must be reaffirmed or rejected (confirmation). The focus is on the user or adopter. Individual Innovativeness theory. Individuals who are risk takers or otherwise innovative will adopt an innovation earlier in the continuum of adoption/diffusion. Rate of Adoption theory. Diffusion takes place over time with innovations going through a slow, gradual growth period, followed by dramatic and rapid growth, and then a gradual stabilization and finally a decline. Perceived Attributes theory. There are five attributes upon which an innovation is judged: that it can be tried out (trialability), that results can be observed (observability), that it has an advantage over other innovations or the present circumstance (relative advantage), that it is not overly complex to learn or use (complexity), that it fits in or is compatible with the circumstances into which it will be adopted (compatibility).

5. CONCEPTUAL FRAMEWORK

A conceptual framework is an analytical tool with several variations and contexts. It is used to make conceptual distinctions and organize ideas. Strong conceptual frameworks capture something real and do this in a way that is easy to remember and apply. The conceptual framework illustrates the relationship that exists between the variables of the study. The independent variables are mobile applications, Enterprise Resource Planning, Electronic Mail Service and Database management system whereas dependent variables are Efficiency, profitability and increased sales.

Independent variables

Dependent variables



6. RESEARCH METHODOLOGY

This research adopted descriptive survey design. This choice for descriptive design in this study was based on the fact that this study sought to establish adoption of ICT and performance of tea processing companies in Kericho County. Kericho County involved in large scale tea production. Namely Togat with a total of 164 employees, Momul 152, Litein 95, Chelal 89 based on their performance output. The researcher used Slovin's formula in determining the sample size of this research. This formula was invented by a statistician Michael Slovin in 2010. Using a confidence level of 90%, the sample size of 84 was used. In this study, the researcher collected both primary and secondary data. Secondary data was collected from documented evidence in literature and other reports while primary data was collected using self-developed questionnaires with both closed as well as open-ended questions.

The questionnaire was also divided into two, one for the company employees and an interview schedule for the management team of the company. Data collection was done through a self-administered questionnaire for the respondents. The researcher obtained approval from the University and got a permit from the National Council for Science and Technology (NACOSTI) to conduct the study. The researcher edited completed questionnaires for completeness and consistency. Data clean-up then followed; this process involves editing, coding, and tabulation in order to detect any anomalies in the responses and assign specific numerical values to the responses for further analysis. The data was then analyzed using descriptive statistics. The descriptive statistical tools (SPSS and Excel) helped the researcher to describe the data. The Likert scale was also used to analyze the mean score and standard deviation. The findings then presented using tables and graphs for further analysis and to facilitate comparison. Internal consistency method will be tested using Cronbach's Alpha. Content validity was employed by this study as a measure of the degree to which data collected using a particular instrument represents a specific domain or content of a particular concept.

7. DATA ANALYSIS

The study sought to explore the impact of electronic mail service on information processing. On whether electronic mail service has an impact on information processing in the tea processing company, the response was as follows:

Table 1: Electronic mail service

Response	Frequency	Percentage
Yes	56	70
No	24	30
Total	80	100

Based on the analysis 70% of the total respondents indicated that electronic mail service affect the rate of information processing in a tea processing company, 30% of the total respondents stated that electronic mail service did not affect the rate of information processing in a tea processing company, From the study it can be concluded that electronic mail service affects the rate of information processing in a tea processing company.

The study also explored whether the use of enterprise resource planning on profitability. The results were as follows:

Table 2: Enterprise Resource Planning on Profitability

Rating	Frequency	Percentage
Excellent	32	40
Good	24	30
Fair	20	25
Poor	4	5
Total	80	100

The study findings indicate that 40% of respondents felt it was excellent, 30% felt it was good while 25% felt it was fair and 5% of respondents felt it was poor. This indicates that the majority of respondents rated the Enterprise Resource Planning on Profitability excellent.

On whether mobile phones had an effect on profitability in the tea processing companies, the respondents indicated the following:

Table 3: Effect of Employee Qualities

Response	Frequency	Percentage
Yes	68	85
No	12	15
Total	80	100

Based on the analysis 85% of the total respondents indicated that mobile phones has an effect on profitability in the tea processing companies. From the study it can be concluded that mobile phones has an effect on the profitability in the tea processing companies.

On how they rated adoption of mobile technology on sales, the response was as follows;

Table 4: Mobile technology on sales

Rating	Frequency	Percentage
Excellent	56	70
Good	16	20
Fair	6	7.5
Poor	2	2.5
Total	80	100

Majority of the respondents 70% rated Mobile technology on sales as excellent, 20% rated it as good, and 7.5% rated it as fair while 2.5% of respondents rated Mobile technology on sales as poor. From the analysis it can be concluded that majority rated Mobile technology on sales excellent.

On whether use of computers had an effect on profitability in the tea processing companies, the respondents indicated the following:

Table 5: Computers on Profitability

Response	Frequency	Percentage
Yes	72	90
No	8	10
Total	80	100

Based on the analysis 90% of the total respondents indicated that computers had an effect on the profitability in the tea processing companies, 10% stated that Computer use had no effect

on the profitability in the tea processing companies. From the study it can be concluded that computers has an effect on the profitability of tea processing companies.

On whether use of Database Management System on profitability (DBMS) had an effect on profitability in the tea processing companies, the respondents indicated the following:

Table 6: Database Management System on profitability on profitability

Response	Frequency	Percentage
Yes Response	76	95
No Response	4	5
Total	80	100

Based on the analysis 95% of the total respondents indicated that Database Management System on profitability has a great effect on the profitability in the tea processing companies, 5% stated that DBMS has no effect on the profitability in the tea processing companies. From the study it can be concluded that DBMS has an effect on the profitability of tea processing companies.

On how they rated the enhancement of ERP within company operations the response was as follows:

Table 7: ERP Rating

	Frequency	Percentage
Through trainings	72	90
Through exchange programs	8	10
None of the above	0	0
Total	80	100

Based on the analysis 90% of the total respondents enhance ERP through trainings, 10% of the total respondents enhance ERP through exchange programs, From the analysis it can be concluded that majority of the respondents enhance ERP through trainings.

8. CONCLUSIONS

The study drew three important conclusions based on its findings and in accordance with its four specific objectives. First, mobile phones contribute a lot in the performance of processing companies because they enhance quick communication through either calling or short message services (SMS) as well as other use of other applications such as WhatsApp. However, this mobile applications posed a great challenge as other employees use them for their personal businesses when on company assignments. Second, the processing companies should invest more in computers as they were found to have a direct relationship with

profitability of the firm as well as database management. Third, ERP should be enhanced in order to increase the overall performance of tea processing firms.

9. RECOMMENDATIONS

The results of this study are important to strategic management practitioners such as managers who run organizations on a daily basis and consultants who are from time to time tasked with improving organizational performance. To begin with, these organizations need to develop and clearly spell out the specific ICT needs of the company which will enhance or improve the performance of the company so as to ensure that the technology is not mismatched. From an academic perspective, the current study's findings hold theoretical importance to management scholars interested in the ICT adoption and performance in processing companies. Also, by empirically reviewing the various aspects of ICT used by tea processing companies in Kericho, this study contributes the existing empirical studies in this area in Kenya.

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