FACTORS INFLUENCING ADOPTION OF E-PAYMENT SYSTEM IN KENYAN PUBLIC TRANSPORT: A CASE OF *MATATU* PLYING NAIROBI-KITENGELA ROUTE

Joshua Mahasi Lubanga
Master of Business Administration, Laikipia University, Kenya

Thomas Gakobo
School of Business (Department of Commerce) Laikipia University, Kenya

Prof. Isaac Ochieng
School of Business (Department of Commerce), Laikipia University, Kenya

Dr. Lawrence N. Kimando
School of Business (Department of Commerce), Laikipia University, Kenya

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ABSTRACT

This study is on factors influencing adoption of e-payment system in public transport sector in Kenya with specific focus on *matatus* operating the Nairobi-Kitengela route. The study contended that the introduction of cashless payment system in the *matatu* industry in Kenya to enhance accountability by removing direct cash was not successful. The *matatu* owners and other stakeholders through a legal injunction successfully petitioned the government to delay implementation of the e-payment system. Ever since, it was not clear to what extent *matatu* stakeholders have implemented the e-payment system for the same reasons cited by the Government or for other reasons. The study was guided by the following objectives; to determine the extent to which human skills, the cost of ICT, and compatibility of technology used or to be used influenced adoption of e-payment by *matatu* plying Nairobi-Kitengela route. The study was guided by three theories: technology acceptance model; diffusion of innovation theory; and technology, organization, and environment context theory. The study was an exploratory study. The total population of the study was the stakeholders in the public transport sector in Kenya, whereas the target population was the operators of companies and Savings and Cooperative Societies (SACCOs) operating public transport business on the Nairobi-Kitengela route. A sample size of 195 respondents was chosen for this study, representing 25% of the target population, with 85% response rate registered. Simple random sampling procedure was used to select the general respondents. Key informants who comprised 20 representatives of the *matatu* management were purposively sampled. An observation checklist was used to ascertain any evidence of adoption of e-payment system. Statistical Package for Social Sciences (SPSS) version 20 was used to analyze the data which was then presented using percentages, frequency distribution tables, charts and graphs. Qualitative data was analyzed using qualitative methods where relationships between variables were noted and the findings reported in narrative form. Finally, logistic regression analysis was used to explain the relationship between the dependent and independent variables. The study found out that introduction of e-payment system is in line with matatu industry policy, according to a larger percentage (41.0%) of the respondents who agreed. It was similarly observed when the respondents were asked about the possible positive changes to be introduced in the industry by e-payment systems, with 42.8% and 5.4% agreeing and strongly agreeing that e-payment shall impact positively. In addition, there was a near consensus among the respondents that e-payment system in the matatu industry would increase efficiency, with 41.0% agreeing and 4.8% disagreeing. However, more than half (51.2%) of the respondents did not know whether information channels and networks on knowledge generation for technology adoption was well understood in the industry. Finally, the respondents agreed (59.6%) that there are miscellaneous costs involved in the adoption of e-payment by the matatu companies. Thirty-six point one Percent (36.1%) and 11.4% of the

respondent said that availability of finance and credit policy was important in the acquisition of e-payment systems in the matatu industry.

Key Words: *e-payment system, Kenyan public transport, matatu, Nairobi-Kitengela route*

INTRODUCTION

With the advent of technology the Internet has come a long way within a very short time as a mainstream business tool that has transformed business activities (Rashid & Al-Qirim, 2001). According to Vuuren and Groenewald (2007) the creation of the Small and Medium Enterprises (SMEs) sector plays a very crucial role towards contributing to the growth of an economy and averting the low Gross National Product (GNP), high unemployment and high levels of poverty in countries. Information communication Technology (ICT) is an umbrella term that encompasses a wide array of systems. These systems have been derived from previous terms like information technology (IT) and new technologies (Anderson and Glen, 2003). ICT is related to those technologies that are used for gathering, processing, storing, protecting, transmitting and retrieving information. The technologies include telecommunication technologies and networking technologies such as networks, extranets, Intranets, Internet, computers, websites as well as mobile phones (Anderson and Glen, 2003). In the present era of electronic commerce (e-commerce) and economic globalization, acquisition of information communication technology (ICT) to support business requirements, regardless of business size, is an important prerequisite to exploiting the benefits of ICT. Lack of understanding or interest in ICT greatly reduces the competitive edge of an enterprise. E-commerce has moved beyond its developing days and is getting down to serious business, becoming a natural part of multi-channel efforts to make sales and improve the bottom line. E-Commerce includes Electronic Data Interchange (EDI), electronic funds transfer at point of sale (EFTPOS), electronic banking, digital cash, and other forms of electronic payment (e-payment) systems (Deitel & Deitel, 2009). E-payment is an important form of technology innovation and a new way for SMEs to do business.

Uzoka (2004) opines that, the global wave of ICT development has become a strong driving force in almost every aspect of human effort. The growth of Information and Communication Technology (ICT) has revolutionized traditional systems of payment. Currently, individuals can carry out many kinds of transactions for goods and services using new methods instead of traditional methods of cash and cheques. This phenomenon according to Gholami, Koh &Lim (2010) of cashless payment is known as e-payment. Gholami, et al. (2010) further noted that with e-payment systems, individuals can pay for goods and services over the counter and via the Internet without the use of cash. E-payment systems have various properties, some of which include time, convenience, transparency, safety and cost savings of transactions. The payment system of a country plays an important role in its economy, as this is the enabling channel for the flow of financial resources (Gholami, et al., 2010). The Internet is a force for change, creating new business economies (Lambert, 2002) and altering considerably the world's economies (Rayport and Jaworski, 2001). As the internet became more commercial and users began to

utilize the World Wide Web in the early 1990s, the term electronic business (e-business) was coined and e-business applications expanded rapidly (Turban et al., 2002). In the times past, large-sized companies had increasingly utilized private networks to undertake e-business, but exorbitant costs impeded to reap the resulting benefits by most SMEs. The internet, however, has changed this equation by making it easier and cheaper for all businesses to transact business and exchange information (Kevin, 2014).

Despite the potential e-business has as a business tool, actual use of it has not taken up as expected. E-business being the integrating of the internet and related ICTs into the business organization and which has two aspects. First being the integration of the supply chain, so that production and delivery becomes a seamless process. The other being the creation of new business models based on open systems of communication between customers, suppliers and partners. Where the integration of the supply chain provides increased efficiency and significant cost advantages through waste minimization, the development of new products and services are facilitated by new ways of conducting business based on internetworking between organizations and individuals. The government of Kenya has made tremendous efforts and invested billions of Kenya shillings in improving the ICT sector of the economy. Some of these investments include the laying of the national backbone fiber optic cable throughout the country to promote Internet adoption and use by businesses and citizens, giving grants and promoting investments and innovations in the ICT sector (Njau, Waiganjo & Kamau, 2015).

With regard to larger multi-national organizations, often business operations are internationalized; with pre-order and post-order processing occurring over the internet platform in order to expedite transaction processing (Awa,Nwibere & Inyang, 2010). The evolution of e-payment system in the world has evolved over time because of the need of handling many passengers. For instance, in Singapore such developments started in 1987 with the introduction of new generation passenger rail system that was widely used in the country. This system was then integrated in the 1990s to cover both rail and bus transport systems using magnetic cards that were then phased out in 2002 (Prakasam, 2009). In Kenya, however, the e-payment system is not fully developed and was started as a form of ensuring accountability and order in the chaotic public transport industry in Kenya. It started with the introduction of ticketing by Kenya Bus Services Company in 1960s (Nyiendo & Munywoki, 2014). A type of online e-ticket model has been used by Kenya Airways, and other firms, for more than ten years where clients buy tickets using credit cards or mobile money. A number of companies have taken the advantage of the mobile money platform in the East African region to direct prospective customers to the e-ticketing payment systems for occasional events such as concert or movie services. A number of long route bus companies have, also, have made some trials but stopped soon after facing some challenges (Nyiendo & Munywoki, 2014).

The transport industry is one of the industries that has a significant effect on the economic growth and development of a nation (Weisbrod & Reno, 2009). Public transport provides mobility and access to areas of interest to people. People engage public transport services when

they want to get access to areas of employment, retail, education, health and recreational facilities, as well as community facilities (Republic of Kenya, 2009). Since the movement of people and goods must occur on day-to-day basis in a working economy, it is certain that the transport sector holds a very critical role to any given nation or society. This importance of the transport sector attracts numerous investments of people who may want to reap the guaranteed returns (Oira & Makori, 2015). The *matatu* is a public commuter transport business spread across the country. *Matatus* are the main public transport in Kenya, it is estimated that it controls 80 per cent of the public transport. The number of *Matatus* is estimated at eighty thousand; twenty and sixty Thousand in Nairobi, and upcountry, respectively. Seventy percent of the *Matatus*, which are commonly referred to as Nissans and are valued at ksh.50 billion/USD 625million, are fourteen seat *Matatus* (Njau *et al*., 2015). *Matatu* enterprises fall under the small and medium enterprises. A *Matatu* directly employs a driver and a conductor. It experiences the common causes of small business collapse such as lack of finance, experience, poor market research, administrative incompetence, overestimation of market demand and uneven flows of work and returns (Bennet, 1994).

Matatu business is the most popular mode of public transport in Kenya. It's one of the most important sectors of our economy spreading over all parts of the country and employing thousands of Kenyans. While others depend on it directly or indirectly, billions of shillings are invested in it ((Ndungu P. *et al.* 2004). The *matatu* enterprises are privately owned and run by individuals. *Matatus* are assigned to almost every route within the country (Kibera *et al*, 1996).The requirement that e-payment system should be effected by the *matatu* industry was to innovate a means of monitoring not only the cash collections, but also the large numbers of passengers entering and dropping off the buses at short distances (Nyiendo & Munywoki, 2014). It is noted that with an innovation exercise such as the adoption of any technology, in particular e-payment, will tend to change the associated work practices and will cause a significant shift in the way people work as they adjust to the work in line with the new technology. Adoption of E-business strategies can go a long way in representing the small business sector in the national economy in order to stay ahead and maintain a competitive advantage (Steyn & Leonard, 2012).

Nderitu (2014) avers that, Fleet management is a major part of any company as far as business and profits are concerned. It enables tighter control of vehicle usage, fuel consumption, running costs and potentially better deals with insurance. Other advantages include automatic fleet report generation for managers; real time tracking minimizes the need to make individual telephone calls to the driver to establish his location, kilometers covered and any other information about the fleet. The vehicle tracking system provides the history of the vehicle, including driving habits. This is vital because in the event that an accident occurs, a fleet manager can know what happened before the accident and is able to have better judgment. In logging in the drivers' details, their driving history can be retrieved easily. A fleet manager can analyze each driver using this history, noting their efficiency, honesty in managing the vehicle and training needs. All these benefits if exploited can significantly contribute to a company's profitability (Nderitu,

2014). In recent days, the growth in technology has drastically changed the way business is done. Therefore, it is important for *matatu* companies and Savings and Credit Cooperative Societies (SACCOs) to deploy fleet management systems in order to reap these benefits. This will help in collection of information and enable them to make decisions quickly based on actual facts gathered and not from imaginations or any other unreliable data (Nderitu, 2014).

E-payment system has fairly worked in the air transport sector where customers use their bank cards to pay for their air tickets. Kenya Airways has led in this direction. The system of e-payment works in two ways. First, there is the use of Radio Frequency Identification (RFID) that establishes communication between the card and the validation device. Second, there is the use of mobile phones to purchase tickets where the customer is notified by a short text of any successful or unsuccessful purchase. The available platforms in Kenya include M-Pesa run by Safaricom with transactions conducted in the same way as mobile money transactions. However, it does not work with non-Safaricom subscribers. There is also *Bebapay* which is a collaboration between Equity Bank and Google, and Visa card system in collaboration with the same bank. In addition, there is the *Pesapal* system that works mostly online. It is the same as online banking. In addition, there are *Mobikash*, My1963Card owned and managed by *matatu* owners association, and Kenya Commercial Bank-MasterCard-Kenya Bus Services Limited *Abiria* Card (Okune, Bachani, & Wairua 2014). All these platforms more or less utilize a mobile phone and a card. Proponents believe that cashless is a more organized structure of payment**,** while there are observable advantages of e-payment system such as efficiency, standardized and convenient way of travelling, or increased revenue by minimizing wastage through pilferage or corruption; there are some concerns such as the cost of setting up the system or transaction charges that have not been answered. In addition, the preponderance of many systems that make it a chaotic arrangement also should be addressed. For instance, it may result to customers being forced to carry around several cards because there is lack of an integrated system for the same or even cases of improper data protection and security (Okune, *et al*. 2014). Niousha, Masoud, & Hamid (2015) emphasized that the establishment of an integrated system of electronic payment card would be very helpful. And causes the change in community problem solving, as well as micro-payments being done faster.

The transport industry is a key contributor to the country's economy and as a way of making the sector more efficient the government has introduced policy regulations which were enacted by the National Government through Ministry of Transport and The National Transport and Safety Authority (NTSA). The Legal Notice No. 217 of NTSA on the Traffic Act (No.17 of 2013), The Traffic Rules Rule 41 A,(i), b(i), published by the Ministry of Transport and Infrastructure on 16th December 2013, required that all public service vehicles and commercial service vehicles be fitted with speed governors that was meant to enforce the speed limit. This was aimed at bringing sanity on roads by reducing road carnage occasioned with *matatu* through over speeding. The industry has been riddled with a myriad of problems that include misuse of the vehicles, owners not able to know where the vehicles are, liquid cash collection onboard the *matatu* has led to lose

of cash through corruption and other fraudulent ways. This phenomenon had made it difficult for transport sector SMEs to graduate into medium or even large scale enterprises (Kirori & Achieng, 2013).

According to the Legal Notice No. 219 of The NTSA Act (No.33 of 2012), Section 7 (f), published by the Ministry of Transport and Infrastructure on 17th December 2013 that partly read "Every operator of licensed public service vehicles shall ensure that passengers are issued with tickets or receipts for fare paid and, as from the 1st July, 2014, it operates a cashless fare system" was most decisive towards e-payment system. The initiative by the Cabinet Secretary (CS) was aimed at introducing special electronic cards system to replace the onboard cash payments method by commuters in the whole of Kenya. Through the Legal Notice No. 219 of The National Transport and Safety Authority Act (No.33 of 2012), *matatu* industry is required to operate a cashless fare system from the 1st of July 2014. The Regulations were subsequently revoked and replaced by those created by Legal Notice 23 of 2014 but these still contain the rule on operating cashless payment system. Essentially, this means that it shall be illegal to operate Public Service Vehicles (PSVs) after that date without a cashless system. Operators or drivers of PSVs in default risk being subjected to a fine of Kshs. 50,000, imprisonment for one year, or both. In addition, the Authority has wide powers to cancel operator and drivers licences for violations of this and other regulations passed by that legal notice (NTSA, 2014).

However, the implementation of the government's directive hit a snag when many of the public service vehicle owners (PSVs) failed to comply by July 1st, which was apparent that there was total resistance to the adoption of the new system by the stakeholders in the industry. The *Matatu* Owners Association (MOA) had appealed successfully to the Government through legal injunction to suspend the launch of the system, citing lack of public awareness and high cost of the equipment as their main reasons (Nyiendo & Munywoki, 2014; Macharia, 2014). Therefore, there is need to explore this resistance to the adoption of e-payment by the *matatu* industry, with special emphasis on factors influencing their adoption or non-adoption. Despite all the benefits the adoption is very low. Previous studies have explored the utilization of technology in the management of the *matatu* companies and SACCOs (Hashim, 2007; Mkabanah, 2012) or *matatu* e-ticketing (Nyiendo & Munywoki, 2014). Wanjau, Macharia & Ayodo (2012) have focused on adoption of electronic commerce among Tour and Travel Firms in Nairobi. Sutanonpaiboon and Pearson (2006) have focused on adoption barriers in the transport industry such as financial constraints, lack of IT knowledge, the impact of perceived compatibility and the role of owner/mangers. There are however few studies focusing on business strategies like adoption of ICT in the Matatu SACCOs. They include Kimani, Kibua and Masinde (2004), Mutongi (2009), Lee-Smith and Diana (2003) and Njau, Waiganjo and Kamau (2015). However, there is no evidence of a study on the factors influencing the adoption of e-payment system in the *matatu* industry.

The benefits of joining the e-payment arena outweigh the costs for most organizations (Barau, *et al*., 2001; Lefebvre, *et al*., 2005; Straub & Klein, 2001). However, SMEs are not taking full

advantage of e-payment technologies when compared to large organizations (Fillis, *et al*., 2004; Peet, *et al*., 2002; Quayle, 2002; Grandon & Pearson, 2004). According to Beheshti and Salehi-Sangari (2006) understanding how a company can benefit from e-payment is the key to e-payment implementation. Small and medium-size organizations must ensure that e-payment will align with their organizational goals and in turn create positive outcomes for the organization. Having a well-developed strategy that includes flexibility and adaptability for launching, maintaining, and updating an e-payment sytem is crucial. Falkena (2000) points to the fact that SMEs are characterized by a decentralization of power to a new management layer (between the SME operator and employees). Thus, SMEs have vast potential of growing into large businesses, should they receive sufficient capital injections. This sector tends to differ from large enterprises in that they stimulate competition , bring about diversity of products and services, have increased flexibility in their internal and external systems and possess hands-on managerial style, which facilitates faster decision-making (Kendall et al., 2001).

When developing an e-payment strategy, companies must identify the areas of the business that will be affected by e-payment implementation. The business owner/manager and key employees should participate in the development of a plan for e-payment implementation and identify benefits derived and changes required by such a system (Kariuki, 2012). Managers should encourage customers and suppliers participation in this phase since the readiness of both for e-payment is essential in the success of an e-payment plan. The plan should include the type of information and communications technologies and security measures needed as well as provide methods for earning the trust of the customers, business partners, and suppliers (Baheshti *et al*, 2006). In addition, a sound entrance strategy must be developed. Entering into e-payment at the wrong time can prove detrimental to an SME (Evans, 1999; Sanderson, 2004; Cote, *et al.*, 2005). Kozak, (2011) emphasized that SMEs grow two to three times faster when they embrace technology.

The rapid rise in the growth of e -payment technology throughout the world is a phenomenon that has been particularly remarkable among many economies, largely because of the e-payment model and ability to store and transfer cash (Milkau,2010). The U.S. retail and public transit micropayments market represents a huge opportunity for converting payments from cash to electronic methods. Quick Service restaurants (QSRs) represent the biggest portion of the market at $153 billion annually, followed by the vending industry ($14 billion) and movie theaters ($14billion), with the public transit market close behind at approximately $10 billion. Despite its smaller revenue base, the mass transit industry in the U.S. and in many other countries is in the vanguard of pioneering contactless payment systems. Given a captive clientele that must use a public transit agency's preferred payment method to utilize its services, the mass transit industry is better positioned than other industries to drive mass adoption of a new payment system. Across the globe, contactless fare collection systems are being implemented to achieve more efficient public transit operations. These systems, if widely accepted, may influence consumer payment use for everyday retail purchases as well (Nasreen, 2008). As a result, all classes of

society now have access to financial services as people become increasingly familiar with E-payment-money bill payment system. This concept of marketing being relatively new to most service industries in Kenya has made them to operate in a highly competitive and uneven marketplace characterized with consumers who are highly literate and financially e-transported (Milkau, 2010).

Despite the benefits associated with electronic money payments, a majority of SMEs have generally been slow in adopting the use of electronic payment (Wajau, 2012; Mutua, 2009). For instance in Indian slums, businesses perceived cash as convenient and safer option of payment than electronic payment systems (Deept & Tiwari 2013). Ghanaian problems dogging mobile money industries were; connectivity, security, scalability, interoperability, accessibility, and agent training and representation (Mensah & Dzokoto, 2013). In Zambia mobile money faced challenges to implement with 17% bad experience, 12% lost phones and 61% used digital money transfers, safety was not thought as an advantage instead speed and convenience were (Imasiku, 2013). In some cases slow adoption is associated with reasons related to implementation or regulatory constraints (Machaels, 2008). Ingenico, (2012) emphasized on the fact that electronic payment instruments are not used with equal intensity even in developed countries. The variations in intensity of adoption as revealed by previous research works are caused by issues to do with security, infrastructure, regulatory and legal issues and socio-cultural challenges. Efficient and safe payment systems matter for the smooth functioning of commerce, financial intermediation and ultimately economic growth. Markets for electronic payment services exhibit economies of scale and various types of externalities and thereby pose challenges to regulators. Four main motives drive regulation for these payments: efficiency, safety, innovation and access (Ndubi, 2015).

STATEMENT OF THE PROBLEM

The public transport sector in Kenya has been experiencing many difficulties affecting both the customers and the owners (Kirori & Achieng, 2013). As a solution the government through the Kenya gazette legal notice No. 23 of 2014 introduced a new requirement for all *matatus* to form member SACCOs or companies. However, the formation of the SACCOs and companies has not been able to address the problems, especially those related to revenue collection and payment of taxes to the government. Nderitu (2014) noted that the drivers have taken advantage of the loopholes created by the lack of countercheck mechanisms for establishing the number of kilometers covered, the routes used, amount of fuel consumed among other things and the unavailability of information on liquid cash collected. To solve this problem, once again the government has introduced a cashless method of paying for fares using the electronic card (NTSA Act 33, 2012). This e-card was expected to enhance accountability by removing direct cash from day to day *matatu* operators. Despite the enormous benefits that the system is expected to bring to the sector, the *matatu* owners and other stakeholders through a legal injunction successfully petitioned the government to delay implementation of the e-payment system. Ever since, it is not clear to what extent *matatu* stakeholders have implemented the e-payment system

and what factors have necessitated that implementation. This study, therefore, sought to investigate factors that influence the adoption of the e-payment system in public transport sector in Kenya, with specific focus on *matatu* plying Nairobi-Kitengela route.

GENERAL OBJECTIVE

The main objective of this study was to investigate factors influencing adoption of e-payment system in public transport industry in Kenya with specific focus on *matatu* operating the Nairobi-Kitengela route.

SPECIFIC OBJECTIVES

1. To determine the extent to which human skills influence adoption e-payment system in the public transport sector.
2. To assess the extent to which the cost of ICT influences adoption of e-payment system in the public transport sector.
3. To ascertain the extent to which compatibility of technology influences adoption of e-payment system in the public transport sector.

THEORETICAL REVIEW

The study was guided by three theories: technology acceptance theory, diffusion of innovation theory and Technology, Organization and Environment context theory.

Technology Acceptance Model

Technology Acceptance Model was introduced by Davis (1989) and emerged from the Theory of Reasoned Action (Fishbein & Ajzen, 1975). The theory postulates that acceptance of technology by individuals or organizations would depend on the technology perceived usefulness (PU) and perceived ease of use (PEOU). PU defines as the degree to which an

Individual believes that using a particular system will enhance the task performance. PEOU defines as the degree to which an individual believes that using a particular system is free of physical and mental effort (Davis, 1993). Venkatesh and Davis (1996) further revised the technology acceptance model (TAM) by excluding attitude towards use from the model as it is claimed not to fully mediate the relationship between perceived ease of use and perceived usefulness with intention to use (Brown, *et al*., 2002). Consequently, the revised model (without the attitude construct) has received substantial empirical support from various studies (Brown, *et al*., 2002; Venkatesh, 2000, Venkatesh & Davis, 1996). In 2000, another version of technology acceptance model was introduced. It defined social influence and cognitive instruments as determinants of perceived usefulness while anchor and adjustments were determinants of perceived ease of use (Venkatesh & Morris, 2000).

Venkatesh, Morris, Davis & Davis (2003) further introduced a modified version of model which is called Unified Theory of Acceptance and Use of Technology (UTAUT). This model suggested

that performance expectancy; effort expectancy, social influence, and facilitating conditions are direct determinants of usage intention and behavior (Venkatesh, *et al*., 2003). Gender, age, experience, and voluntariness of use are mediators between the relationship of four key constructs and usage intention and behavior (Venkatesh, *et al*., 2003). Therefore, the technical know-how required to use e-payment can prevent its adoption. The complexity of technology creates greater uncertainty for successful implementation and therefore increases the risk in the adoption decision. It is expected that a high degree of perceived complexity of ICT would negatively influence the decision to adopt it (Rashid & Al-Qirim, 2001 and Seyal & Rahman, 2003). Thus enterprises would choose forms of ICT that conform to certain internal values and experience, which enables them to reduce the perceived risks and to make minimal adjustments and changes and therefore less resistance to adoption. According to TAM individuals' intention to use technology determines the actual use of the application and attitudes toward technology affect the intention (Venkatesh, Thong & Xu, 2012). Perceived usefulness and perceived ease factors are affected by various external variables such as level of education (Burton-Jones and Hubona, 2005), gender (Venkatesh and Morris, 2000), or organizational features such as training in computer use (Venkatesh et al., 2012).

The incompatibility of a new e-payment system with existing work procedures, value systems and infrastructure negatively affects the attitudes of users and increases their resistance to change, thus hindering its adoption of e-payment (Rashid & Al-Qirim, 2001). Similarly, compatibility may influence behavioral intention indirectly through performance expectancy and effort expectancy. It is true that compatibility directly affects e-payment adoption through end users perceiving a technology as being useful to their work (Chau & Hu, 2002). The more the perceived benefits outweigh the perceived costs the more likely decision-makers are willing to consider adoption. Likewise, the more perceived costs outweigh perceived benefits; the less likely decision-makers will pursue adoption. Moreover, even though there is a considerable amount of evidence that benefits exceed costs, companies may still be reluctant to adopt due to an apparent lack of organizational readiness (Ramapuriya, 2011).

Diffusion of Innovation Theory

The Diffusion of Innovation (DOI) model introduced by Rogers (1983) remains a popular model in the investigation of the behavior of users in adopting new technological innovation. The DOI is a broad psychological or sociological theory used to describe the patterns of adoption, explain the mechanism and assist in predicting whether and how a new invention will be successful. Specifically, diffusion is defined as a process by which an innovation is communicated through certain channels over a period of time among the members of a social system. Innovation, on the other hand, is defined as an idea, practice, or object that is perceived to be new by an individual or other unit of adoption. Communication is a process in which participants create and share information with one another to reach a mutual understanding (Rogers, 1983). In short, the DOI is concerned with the manner in which new technological ideas migrate from creation to use and

that technological innovation is communicated through particular channels, over time, among the members of a social system.

It's very useful for a change agent to be able to identify which category certain individuals belong to, since the short-term goal of most change agents is to facilitate the adoption of an innovation. Adoption of a new idea is caused by human interaction through interpersonal networks. If the initial adopter of an innovation discusses it with two members of a given social system, and these two become adopters who pass the innovation along to two peers, and so on. Adoption of a new idea, behavior, or product does not happen simultaneously in a social system; rather it is a process whereby some people are more apt to adopt the innovation than others. Researchers have found that people who adopt an innovation early have different characteristics than people who adopt an innovation later. When promoting an innovation to a target population, it is important to understand the characteristics of the target population that will help or hinder adoption of the innovation.

Wayne (2016) noted that there are five established adopter categories, and while the majority of the general population tends to fall in the middle categories, it is still necessary to understand the characteristics of the target population. When promoting an innovation, there are different strategies used to appeal to the different adopter categories, namely innovators, early adopters, early majority, late majority and laggards. The Innovators are people who want to be the first to try the innovation. They are venturesome and interested in new ideas. These people are very willing to take risks, and are often the first to develop new ideas. Very little, if anything needs to be done to appeal to this population. Whereas the Early Adopters are people who represent opinion leaders. They enjoy leadership roles, and embrace change opportunities. They are already aware of the need to change and so are very comfortable adopting new ideas. Strategies to appeal to this population include how-to manuals and information sheets on implementation. They do not need information to convince them to change. They provide advice and information sought by other adopters about an innovation. Change agents will seek out early adopters to help speed the diffusion process (Wayne, 2016). The Early Majority are rarely leaders, but they do adopt new ideas before the average person. They typically need to see evidence that the innovation works before they are willing to adopt it. Strategies to appeal to this population include success stories and evidence of the innovation's effectiveness. Their innovation-decision time is relatively longer than innovators and early adopters, since they deliberate some time before completely adopting a new idea. Seldom leading, early majority adopters willingly follow in adopting innovations (Wayne, 2016).

The Late Majority are people who are skeptical of change, and will only adopt an innovation after it has been tried by the majority. Strategies to appeal to this population include information on how many other people have tried the innovation and have adopted it successfully. An innovation must definitely have the weight of system norms behind it to convince the late majority. While they may be persuaded about the utility of an innovation, there must be strong

pressure from peers to adopt (Wayne, 2016). And finally the Laggards are people that are bound by tradition and very conservative. They are very skeptical of change and are the hardest group to bring on board. Strategies to appeal to this population include statistics, fear appeals, and pressure from people in the other adopter groups. An innovation finally adopted by a laggard may already be rendered obsolete by more recent ideas already in use by innovators. Laggards are likely to be suspicious not only of innovations, but of innovators and change agents as well (Wayne, 2016).

Based on the DOI model, Rogers (1983) proposed five important perceived characteristics of innovation. They are relative advantage – the degree to which the innovation is perceived to be better than what it supersedes, compatibility – the degree to which the innovation is consistent with existing values, past experiences and needs, complexity – the degree to which the innovation is difficult to understand and use, trialability – the degree to which the innovation can be experimented on a limited basis, and observability - the degree of visibility of the results of the new innovation. Innovations are not adopted by all individuals in a social system at the same time. Instead, they tend to adopt in a time sequence, and can be classified into adopter categories based upon how long it takes for them to begin using the new idea. Such characteristics are true with the introduction of e-payment in the public transport sector in Kenya. They quite often were unsure of the efficacy of the proposed system, thus they tended to be hesitant until fully convinced.

Christopher, Mark and John (2001) described the phenomenon of multi-group adoption with a particular focus on applications within the financial services and retailing industries. Their findings from the study illustrated the importance of evaluating and managing multi-group technology adoption in the specific context of an in-market trial of a new smart card-based electronic payment system. Two distinct groups critical to the smart card's success were studied: consumers (who must decide to use the new card) and retailers (who must agree to adopt and use new technology needed to process smart card transactions). The study identified which characteristics of the smart card innovation were most closely linked to intention to adopt for each group, and examined how these key characteristics differed by group. The most important characteristic leading to adoption identified by all groups was relative advantage; the smart card had to demonstrate a clear competitive advantage over what they currently used. Compatibility (the degree to which the smart card fit with their current preferences) was also noted as important to all. Beyond this, the key drivers of adoption differed considerably by group. Participating consumers and participating merchants appeared to possess different perspectives when assessing their decision to adopt the smart card technology. Rogers' DOI theory also includes individual or organizational innovation-decision processes.

E-Business adoption research suggested individual decision processes are more relevant to small firms because owners are often the primary decision-makers (Premkumar, 2003). This process involved gaining knowledge of an innovation and basic information about it; forming an

(un)favorable attitude (perhaps influenced by opinion Leaders); making a decision about using it on a partial or trial basis; implementing the innovation fully; and then confirming if the decision was appropriate. The organizational decision processes (involving agenda-setting, matching, re-inventing, clarifying and routinizing) is less appropriate because it implies a formal structure which is less common in small firms (Levenburg, 2005).

Technology, Organization and Environment Model

The TOE framework was developed in 1990 (Tornatzky and Fleischer 1990). It identifies three aspects of an enterprise's context that influence the process by which it adopts and implements a technological innovation: technological context, organizational context, and environmental context. The Technological context describes both the internal and external technologies relevant to the firm. This includes current practices and equipment internal to the firm (Starbuck 1976), as well as the set of available technologies external to the firm (Thompson 1967). Tornatzky and Fleischer (1990), described the following steps as depicting the systems design perspective that incorporates the best aspects of the methods used in implementing technology solutions, namely - technocentric, conflict/bargaining, sociocentric, systems life cycle, and socio-technical systems approaches. Different aspects of these approaches can be more prominent in the one or more steps discussed below. The Organizational context refers to descriptive measures about the organization such as scope, size, and managerial structure. Finally the Environmental context is the arena in which a firm conducts its business—its industry, competitors, and dealings with the government (Tornatzky & Fleischer, 1990).

The TOE framework as originally presented, and later adapted in IT adoption studies, it gives a useful analytical framework that could be used for studying the adoption and assimilation of different types of IT innovations. The TOE framework has a solid theoretical basis, consistent empirical support and the potential of implementation and application to IS innovation domains, though specific factors identified within the three contexts may vary across different studies. This framework is consistent with the DOI theory, in which Rogers (1995) emphasized individual characteristics, and both the internal and external characteristics of the organization, as drivers for organizational innovativeness. These are identical to the technology and organization context of the TOE framework, but the TOE framework also includes a new and important component, environment context. The environment context presents both constraints and opportunities for technological innovation. The TOE framework makes Rogers' innovation diffusion theory better able to explain intra-firm innovation diffusion (Hsu, Kraemer & Dunkle 2006).

The technology resources available internally in these institutions are a reflection of the technology competence and for the case of Kenya these comprise the ICT technical infrastructure, ICT competent employees, internet connections and bandwidth. An institutions technical competence is a strong enabler for adoption of Information Technologies as it forms a

basis upon which such initiatives are built (Tornatzky & Fleischer, 1990). The organizational context comprises an institution's innovativeness, top management support, organizational culture, the quality of human resource, and size (Tornatzky & Fleischer, 1990; Awa, Ukoha & Emecheta, 2012). Organizational culture is associated with the organization's sense of identity, its core values, and its primary ways of working and a set of shared assumptions (Scott, 2007). Top management support manifests itself in supportive leadership. Scott (2007) Observed that the institutions readiness for adoption of an innovation is dependent on technical skills, and therefore a strong IT staff equipped high technical skills and interpersonal skills, will enable an effective partnership between IT and other functions dependent on IT at such institutions. According to Zhu, Kraemer, and Xu (2002), Firm size has been consistently recognized as an adoption facilitator. The environmental context comprises factors of institutions surroundings, consisting of stakeholders such as sponsors, the government, the community, and competitive pressure. These can influence how an institution interprets the need for innovation, its ability to acquire the resources for pursuing innovation, and its capability for actually deploying (Angeles, 2013). Government regulations can force resources to be allocated for compliance.

RESEARCH METHODOLOGY

Research Design

This was an exploratory study. The exploratory research also describes specific aspects of a given population by examining the relationships between variables whose results are generalized to the larger population (Singleton et al., 1993). A descriptive survey methods are concerned with finding out who, what, where, when or how much of a phenomena (Cooper, 2001). This study explored factors influencing the adoption of e-payment in the public transport sector in Kenya by surveying how the SMEs have adopted this mode of payment and how they were utilizing various related ICT systems as part of their growth strategies.

Population of Study

The population is a complete set of individuals, cases or objects with some common observable characteristics (Mugenda & Mugenda, 2003). The total population of the study were the players in the public transport sector in Kenya, whereas the target population were the operators of companies and Savings and Cooperative Societies (SACCOs) operating public transport business on the Nairobi-Kitengela route, according to the NTSA that licenses the public transport companies and SACCOs in Kenya. There were 13 registered public transport operators in the Nairobi-Kitengela route, each having on average 30 vehicles (NTSA, 2015). This came to 390 matatu on that route. Each vehicle had an average of 2 operators, making a total of 780 target population.

Sampling Technique and Sample Size

The study used simple random sampling technique to select the respondents. Simple random sampling is a probability method that gives each member of the sample an equal chance of being included and chosen for the study (Kothari & Garg, 2014). A sample size of 195 matatu operators was chosen for this study, representing a sample of 25% of the target population. It was deemed adequate for generalization and is above the 10% recommended for such a study (Gay & Airasian, 2003). Key informants who comprised 20 representatives of the matatu operators plying Nairobi-Kitengela route were purposively sampled. In addition, an observation checklist was used to ascertain any evidence of adoption of e-payment system. With respect to the respondents, there were 166 respondents reached out of the total target of 195, representing 85% response rate. The respondents were distributed into 12 SACCOs, with Wamasaa, and Kacose forming the bulk at 12.7% and 12.0% respectively. Naekena was least represented at 5.4%.

Data Collection

The study used questionnaires and key informant guides to collect primary data. A questionnaire with topics covering all aspects of the research was the main tool for collecting quantitative data. The questionnaire used the Likert scale to rank cases from 1 to 5. The questionnaire was administered face to face with the help of trained research assistants. In addition, key informant guides were used to collect information from the management of the public transport sector in the Nairobi-Kitengela route with more knowledge of the adoption of e-payment system. Finally, observation checklist was used to observe any evidence of adoption of e-payment system. All the tools were designed to capture the objectives of the study adequately.

Reliability of Research Instruments

Kothari and Garg (2014) observe that reliability of an instrument can be assessed by asking such questions as who collected the data, the sources of the data and whether proper methods were used. In this study the researcher did peer review of the data collection instruments, sought expert opinion through the supervisors about the reliability of the instruments. This process was further enhanced by a pilot study. In addition, internal reliability test of the instruments was carried out. Internal consistency reliability evaluates individual questions in comparison with one another for their ability to give consistently appropriate results (Mugenda & Mugenda, 2003). The internal consistency reliability was tested using Cronbach Coefficient alpha that used the data from the pilot test. Alpha coefficient ranges in value from 0 to 1 and are used to describe the reliability of factors extracted from dichotomous (that is, questions with two possible answers) and/or multi-point formatted questionnaires or scales. The higher the score, the more reliable the generated scale is. Scales of 0.7 have been indicated to have an acceptable reliability coefficient. This scale measurement tool is very common in measuring internal consistency of most social sciences research instruments.

Validity of the Data

A pilot study was carried out to determine the validity of the data captured by the research instruments. Validity was extent to which research results was accurately interpreted and generalized to other populations. Individuals were asked to evaluate the questions for relevance and whether they were meaningful and clear. The data was analyzed and the report shared with the *matatu* operators and the colleagues of the researcher to determine the validity of the data.

Pilot Study

A pilot study was carried out in the Nairobi-Kawangware route to determine the validity and reliability of the questionnaire and data captured by the research instruments. Forty-nine (49) matatu operators who represent 25% of the sample size were asked to evaluate the statements for relevance and whether they were meaningful and clear.

Data Analysis

Quantitative data was coded, entered, and analyzed using Statistical Package for Social Sciences (SPSS) version 21. Qualitative data was analyzed using qualitative methods where relationships between variables were noted and the findings reported in narrative form (Mugenda & Mugenda, 2003). The data was presented using descriptive statistics such as measures of central tendency like mean, median and mode and measures of dispersion such as range, standard deviation and variance (Kothari & Garg, 2014). Logistic regression analysis was used to explain the relationship between the dependent and independent variables. It measures the relationship between the dependent variables with one or more independent variables by estimating probabilities using the following logistic function:

$$p=P(a+bx)$$

Where: **p** is the probability of an event as affected by one or more variables; **P** is the regression coefficient; **a** and **b** are model parameters; **x** is the variable (independent or dependent)

The predicted values of the relationships were restricted to generalized probabilities 0 and 1 (Kothari & Garg, 2014). In the case of this study, 0 meant non-adoption of e-payment system, whereas 1 meant adoption of e-payment system.

DISCUSSION OF FINDINGS

The challenge in introduction of e-payment system in the matatu industry is lack of appropriate human skills. In all cases during the industry, the majority of the matatu industry stakeholders (drivers and conductors) had on average limited education, with a greater percentage (72.3%) of the respondents had secondary education. This was corroborated by the number of responses that were not user of every response. Responses from the key informants likewise noted such

challenges as the need for retraining or restructuring the industry to attract more skilled or more educated individuals. This shall be a result of national policy changes other than just e-payment systems. This agrees with Kaburia (2004) carried out a study of E-payment systems and alternatives for developing countries. The main purpose of the research project was to examine the e-payment alternatives that existed in Kenya and the world, and the extent of use of e-commerce and e-payment methods in Kenya. Three samples; one of individuals, another one comprising organizations and another sample of commercial banks and PSPs (payment Service Providers) were studied. The research found out that indeed the lack of suitable e-payment alternatives among other factors were a critical challenge to the growth of e-commerce in Kenya. When logistic regression tests were done, it was established that there was very weak adoption of e-payment in the *matatu* industry, with the significance value at 0.076 closer to 0 than to 1.

Table 1: Logistic Regression

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	V9	.540	.304	3.158	1	.076	1.716
	Constant	-3.497	1.023	11.673	1	.001	.030

a. Variable(s) entered on step 1: V9.

CONCLUSIONS

Introduction of e-payment system is in line with *matatu* industry policy, according to a larger percentage (41.0%) of the respondents who agreed. It was similarly observed when the respondents were asked about the possible positive changes to be introduced in the industry by e-payment systems, with 42.8% and 5.4% agreeing and strongly agreeing that e-payment shall impact positively. In addition, there was a near consensus among the respondents that e-payment system in the *matatu* industry would increase efficiency, with 41.0% agreeing and 4.8% disagreeing. However, when the respondents were asked whether e-payment was part and parcel of their everyday operations, hence did not require special skills to operate, majority (44.0%) were not sure, whereas 26.6% disagreed. More than half (51.2%) of the respondents did not know whether information channels and networks on knowledge generation for technology adoption was well understood in the industry. The respondents were similarly not certain about the importance of skills and capacity towards acceptance and use of the e-payment system in their organizations. Fifty-seven point eight Percent (57.8%) were neutral. This was because a greater percentage (72.3%) of the respondents had secondary education, which was limited as far as understanding of e-payment system was concerned. Finally, the respondents agreed (59.6%) that there are miscellaneous costs involved in the adoption of e-payment by the *matatu* companies. Thirty-six point one percent (36.1%) and 11.4% of the respondent said that availability of finance and credit policy was important in the acquisition of e-payment systems in the *matatu* industry.

RECOMMENDATIONS

The study recommends the following towards adoption of e-payment system in the matatu industry in Kenya:

1. Sector-wide review of the *matatu* industry with target on policies and systemic issues preventing adoption of e-payment system as well as
2. Training of stakeholders on the need for e-payment system
3. Government leading by example by enabling some stakeholders to implement the e-payment platforms so that the rest can follow the example
4. Introducing incentives towards implementation of the e-payment system such as zero-rating taxation on the gadgets
5. Enabling *matatu* industry to have a say in the implementation process, especially having shareholding in the e-payment processes, not leaving it entirely to financial institutions

REFERENCES

Angeles, R. (2013). Using the Technology-Organization-Environment Framework and Zuboff's Concepts for Understanding Environmental Sustainability and RFID: Two Case Studies. *International Journal of Social, Education, Economics and Management Engineering*, 7 (11), 1599-1608.

Awa, H. O., Nwibere, B. M. & Inyang, B. J. (2010). The uptake of electronic commerce by SMEs: a Meta theoretical framework expanding the determining constructs of TAM and TOE frameworks. *Journal of Global and Business Technology, 6* (1), 1-27.

Awa, H. O., Ukoha, O. & Emecheta, B. C. (2012). Integrating TAM and TOE Frameworks and Expanding their Characteristic Constructs for E-Commerce Adoption by SMEs. *Informing Science & IT Education Conference (InSITE)*. Informing Science Institute.

Beheshti, H. M. & Salehi-Sangar, E. (2006). The benefits of e-business adoption: an empirical study of Swedish SMEs. *Service Business*, 1, 233–245

Brown, D. H. & Kaewkitipong, L.(2009). Relative size and complexity; e-business use in small and medium sized tourism enterprises in Thailand. *Journal of Enterprise Information Management*, (22)1/2, pp. 212-231

Chau, P. Y. & Hu, P. J. (2002). Examining a model for information technology acceptanceby individual professionals: An exploratory study. *Management in Information Systems, 18* (4), 191-229.

Christopher R. P., Mark V. & John H. (2001).Intermediating technologies and multi-group adoption: A comparison of consumer and merchant adoption intentions toward a new electronic payment system. *The Journal of Product Innovation Management*. 18(2), 65-81

Cote, L., Vezina, M. & Sabourin, V. (2005). The strategic management process in business. *Ivey Business Journal* 1–7

Davis, F.D. (1993). User acceptance of information technology: System characteristics, user Perceptions and behavioral impacts. *International Journal of Management Studies*. (38) pp 475-487.

Deept, K. & Tiwari, K. (2013). *Understanding the movement of cash of the privately led Enterprises in Dharavi and scope for electronic or mobile payments. Institute for Money,Technology & Finance Inclusion*. New Delhi: uclrvine.

Deitel, P. J., & Deitel, H. M. (2009). *Java: How to Program* (7 ed.). New Jersey: Prentice Hall.

Evans, N. (1999). Flexibility, adaptability are key to e-business. Internet Week, 16

Fillis, I., Johannson, U. & Wagner, B. (2004). Factors impacting on e-business adoption and development in the smaller firm. *International Journal of Entrepreneurship an Behavioural Research*, 10 (3), 178-191.

Gay, L. R. & Airasian, P. (2003). *Educational research: Competencies for analysis and application*. Columbus: Charles and Merrill Publishing.

Gholami, R. Ogun, A. Koh, E. & Lim, J. (2010). Factors Affecting e-payment Adoption in Nigeria. *Journal of Electronic Commerce in Organizations*, 8 (4), 51-67.

Hsu, P.F., Kraemer, K.L. and Dunkle, D. (2006). Determinants of e-business use in us firms, *International Journal of Electronic Commerce*, 10 (4), 9-45.

Ingenico. (2012). *Electronic Payment Architecture and Trends in Europe.* Köln: Ingenico Corporate Communication.

Kaburia, P.T. (2004). *E-Payment systems and alternatives for developing countries*. unpublished MBA research project, University of Nairobi

Kariuki, A.G. (2012). ICT Attributes as Determinants of E-commerce Adoption by Formal Small Enterprises in Urban Kenya. *International Journal of Business and Social Science*, 3(23), 65-74.

Kevin, W. (2014). Adoption of E-Business by Small and Medium Enterprises in Kenya: Barriers and Facilitators. *International Journal of Academic Research in Business and Social Sciences*, 4(11), 88-118.

Kimani, P., Kibua, T. & Masinde, M. (2010). The Role of the Matatu industry in Kenya: Economic Costs, Benefits and Policy Concerns. IPAR Discussion Paper Series, Discussion Paper No. 053/2004. *Kenya Institute of Policy Analysis and Research.* Kenya: Regal Press.

Kothari, R. & Garg, G. (2014). *Research methodology, methods and techniques*. 2nd Ed. New Delhi, India: New Age International Publishers.

Kozak, R. (2011). *Small and Medium Forest Enterprises: Instruments of change in the developing world*. University of British Columbia.

Lee, H. & Kim, J. (2007). Determinants of success for application service provider: an empirical test in small businesses. *International Journal of Human-Computer Studies*, 65(9), 796-815.

Levenburg, N.M. (2005). Does size matter? Small firms' use of e-business tools in the supply chain. *Electronic Markets*, 2(15), 94-105.

Machaels L. (2008). GSMA Development Fund Top 20; *Research on the Social and Economic Impact of Mobile Communications in Developing countries*. New York: United State Agencies.

Mensah, E. & Dzokoto, M. (2013). Trains at different stations.the Ghanain -Kenyan Money Discource. IMTFI/ UCI. *Institute of Money ,Technology & Finance*.

Milkau, U. (2010). A new paradigm in payments: The strengths of networks. *Journal of Payments Strategy & Systems,* 4(3), 277-288.

Mugenda, O. & Mugenda, A. (2003). *Research methods: Quantitative and qualitative approaches*. Nairobi, Kenya: Africa Centre for Technology Studies.

Mutua, W., J. (2009). ICT Adoption and performance of Small -Medium sized Enterprises in Kenya. Nairobi: *African Economic Research Consortum* (AER).

Nasreen, Q. (2008). *The Contactless Wave: A Case Study in Transit Payments*. Emerging Payments Industry Briefing. Federal Reserve Bank of Boston

Niousha, D., Masoud, B. & Hamid, B. (2015). Factors influencing the adoption of electronic payment cards in urban micro-payments. *Basic Research Journal of Business Management and Accounts*. 4(2) pp. 62-70

Njau, J., Waiganjo, E. & Kamau, J. (2015). Factors affecting the adoption of information and computer technology in small and medium enterprises in kenya: a case of matatu saccos in thika town. *Strategic Journal of business & Change management,* 2(18), 343-368

Nyiendo, O.S. & Munywoki, E. M. (2014). Matatu e-ticketing system: An assessment of cashless paying system for public transport in Kenya. *School of Science and Technology*, USIU, Africa, Nairobi, Kenya.

Oira, A. & Makori, M. (2015). Challenges affecting investment in public transport (Matatu) Industry in Nairobi-Kenya. *Strategic Journal of business & Change management,* 2(64), 521-558

Okune, A. (2014, June 9). *Cashless public transport payment systems - What are our options?* </www.ihub.co.ke/blogs/19071> Accessed 15 September 2015.

Prakasam, S. (2009). Evolution of e-payments in public transport—Singapore's experience. *Journeys*.

Premkumar, G. (2003). A Meta-Analysis of Research on Information Technolog Implementation in Small Business**.** *Journal of Organizational Computing and Electronic Commerce.* 2(13), 99-121

Ramapuriya, M. (2011). Understanding the factors driving adoption of e-Business – http://www.danga.biz/2009/12/understanding-factors-driving-adoption.html

Rashid, M. A. & Al-Qirim, N. A. (2001). E-commerce technology adoption framework by New Zealand small to medium enterprises. *Research letters Information Mathematical Science,* 2 (1), 63-70.

Rayport, J. & Jaworski, B. (2001). E-Commerce, McGraw-Hill/ Irwin, New York, NY.

Republic of Kenya (2009). Integrated national transport policy: Moving a working nation. Report by the Ministry of Transport. Nairobi.

Rogers, E. M. & Shoemaker, F. F. (1971). *Communication of Innovation*. New York: The Free Press.

Sanderson, J. (2004). Opportunity and constraint in business-to-business relationships: insights From strategic choice and zones of manoeuvre. *Supply Chain Management International Journal*, 9(5), 392–401

Scott, J. E. (2007). An e-Transformation Study Using the Technology–Organization–Environment Framework. *20th Bled eConference eMergence: Merging and Emerging Technologies, Processes, and Institutions*. Bled, Slovenia.

Singleton, R. A.; Straits, B. C. & Straits, M. M. (1993). *Approaches to social research*. 2nd Ed. New York: Oxford University Press.

Sutanonpaiboon, J. & Pearson, A.M. (2006). E-commerce adoption: perceptions of managers/owners of transport enterprises (SMEs) in Thailand. *Journal of Internet Commerce*, 5 (3), 53-82.

Thompson, J.D. (1967). Organizations in action, *New York*, McGraw-Hill.

Tornatzky, L. & Fleischer, M. (1990). The process of technology innovation, Lexington, MA, Lexington Books.

Turban, E., King, D., Lee, J., Warkentin, M. & Chung, H.M. (2002). *Electronic Commerce*, 2nd ed., Prentice-Hall, Englewood Cliffs, NJ.

Venkatesh, V., Morris, M.G., Davis, G.B. & Davis, F.D. (2003). User acceptance of information technology: Toward a unified view, *MIS Quarterly*, *27*(3), pp. 425-478.

Venkatesh, V., Thong J.Y.L. & Xu, X. (2012). Consumer acceptance and use of Information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*. 36: pp.157-178.

Vuuren, van J. J. & Groenewald, D. (2007). A critical analysis of the influence of start-up

factors in small businesses and entrepreneurial ventures in South Africa. *ActaCommercii, 4* (1), 269-280.

Wanjau, K. (2012). Factors affecting Adoption of Electronic Commerce among Small Medium Enterprises in Kenya ; Survey of Tour and Travel Firms in Nairobi . *International Journal of Business ,Humanities and Technolohgy*. 45-50.

Wayne, W. (2016). *Behavioral Change Models*. Boston University School of Public Health

Weisbrod, G. & Reno, A. (2009). Economic Impact of Public Transportation Investment, Paper prepared for the American Public Transportation Association. Retrieved.http://www.apta.com/resources/reportsandpublications/Documents/ economic_impact_of_public_transportation_investment.pdf

Zhu, K., Kraemer, K. L. & Xu, S. (2002). A Cross-Country Study of Electronic Business Adoption Using the Technology-Organization-Environment Framework. *Twenty-Third International Conference on Information Systems*, (pp. 337-348).