

INFLUENCE OF SERVICE AUTOMATION PROJECT ON CUSTOMER SATISFACTION IN NATIONAL TRANSPORT AND SAFETY AUTHORITY, KENYA

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ABSTRACT

There are challenges being faced in public service institutions. The National Transport and Safety Authority, Kenya has not been able to fully accomplish its mandates. They have not been able to provide adequate advice and recommend on matters related to road and vehicle safety, improve and implement road safety measures and manage plans for the road transport sector in accord with the law on transport, ensure the security of supply, reliability, and road transport services, and parliamentary legislation established in the first program, in addition to other laws. The purpose of the study was to study the influence of service automation project on customer satisfaction in National Transport and Safety Authority, Kenya. The study objectives were include to establish the influence of system/software quality, ease of use of project management information system, perceived usefulness of the system and quality of the information generated by the system on customer satisfaction in the National Transport and Safety Authority. The theoretical underpinning of the study were the Delone and Mclean IS Success Model, Project Management Maturity Model (PMMM), Technology, Organization, and Environment Context (TOE) and Institutional Theory. The study adopted a descriptive research design. The population for this study comprised of management staff in various department at the National Transport and Safety Authority headquarters. The sample population of 150 was arrived at by calculating the target population of 246 with a 95% confidence level and an error of 0.05 using the below

formula taken from Kothari (2004). Stratified proportionate random sampling technique was used to select the respondents. Primary data was obtained using self-administered questionnaires. The researcher booked appointment with respondent organizations at least two days before visiting to administer questionnaires. The researcher personally administered the research instruments to the respondents. Data was analyzed using Statistical Package for Social Sciences (SPSS Version 25.0). Descriptive statistics were used because they enable the researcher to meaningfully describe distribution of scores or measurements using few indices. The qualitative data from the open-ended questions were analyzed using conceptual content. Inferential data analysis was done using Pearson correlation coefficient and regression analysis (multiple regression analysis). The study found that System / software quality influences customer satisfaction in National Transport and Safety Authority, Kenya greatly. The study revealed that perceived usefulness of the system has a moderate effect on customer satisfaction in National Transport and Safety Authority, Kenya. The study found that Ease of use / Customization has a little effect on customer satisfaction in National Transport and Safety Authority, Kenya. The study concluded that System / software quality had the greatest influence on customer satisfaction in National Transport and Safety Authority, Kenya followed by quality of the information generated by the system, then perceived usefulness of the system while Ease of use / Customization had the least influence on the customer satisfaction in

National Transport and Safety Authority, Kenya. Further the study recommends that government should continue to create an enabling environment to facilitate continued service innovations by National Transport and Safety Authority. Increased flexibility in

the industry and infrastructure should be provided so as to bring about a level playing that will foster creativity.

Key Words: *service automation project, customer satisfaction, National Transport and Safety Authority, Kenya*

INTRODUCTION

The ultimate importance of business process automation is enabling very quickly agility and business control. Today, society is aiming at maximizing automation rather than reconfiguring it. Automation is the process of having machines or IT systems taking over functions that were previously being undertaken by humans. Automation of business processes is adopted by companies to make the processes uniform and free of errors. It also helps increase speed of processing and in turn improve customer satisfaction since the product or service quality is predictable. In addition, automation leads to reduced human resource related costs since fewer people are required to operate the systems as opposed to them carrying out the actual process (Mise 2016). Advances in technology and cloud computing success have sped up the growth of business processes from 're-generation' to 'automation'. As businesses tend towards performing tasks that are more complex and labor-intensive tasks. The goal is to automate as many manual processes as possible. There has been shown to be a great link between automation and delivering high quality products and better customer service results in long-term customers who are generally happier. Performing tasks manually takes time and they are performed by human beings that are prone to error and inconsistency (Annette, 2014).

Many countries around the world have developed policies and strategies to promote innovation in public service delivery and enhance the capability of the public service as an institution. In Australia more emphasis of service delivery was extended to Indigenous families which were affected by a range of complex issues that had an impact on their wellbeing (AIHW 2011). For remote Indigenous communities in Australia, there are specific challenges of being physically isolated from major service centres. Australian governments have shifted towards a 'whole-of-government' approach to provide long-term place-based initiatives and 'joined-up' services with a view to improving efficiencies, avoiding duplication, and to move away from departmental silo-based frameworks (Gleeson 2011).

Automation greatly reduces the tasks that would otherwise be done manually. This creates more time for one to work on items that are more important to the business, it also leaves time for innovation and increases the employees' level of motivation. Automated processes are predefined and this makes them work consistently and accurately within a specified time frame. Automating processes reduces the amount of time it takes to complete a task, the effort required to tackle it and the cost of doing it to completion successfully. Automation eliminates errors, ensures smooth running of systems, improves efficiency and ensures that your best practices are

constantly improved. This project's criteria of project performance will be quality, cost and time which are the basic elements of the success of a project. For conformity and effectiveness of quality performance to be ensured, quality requirements should be clearly specified and stated explicitly in end user output and in design. The project performance is measured in terms of quality, profitability, time and cost (Lim & Mohammed, 2012).

Customer satisfaction extends far beyond the purchase of machines and devices, as the increasing shift towards a mobile-enabled, connected world has conditioned end-users to expect delivery of products and services in real time. People do not have time to wait around for a technician set to arrive sometime within an 8-hour time-frame; with the help of up-to-date, automated status reports via mobile devices (including phones, tablets and more), customers are supported as conveniently as possible. An automated system also benefits the technicians, as they can receive real-time information on their schedules, directly to their mobile device. If a colleague is unable to perform a project or task, the automated software dispatches the adequate person to the assignment and eliminates the tasks of heading to the back office to get assignments or manually checking the best route to appointments (Khadka 2017).

Most developed countries are investing in digital government services, they include; Germany's Virtual labour market platform to reintegrate job seekers into the labour market; Singapore's SingPass single sign-on system, providing access to a whole range of government services, such as a citizen's electronic health record; the UK's 'digital by default' strategy; Korea's KONEPS online e-procurement system, consolidating 120 government procurement systems; India's Aadhaar, unique identity card; in response to this global push for digital government services, a growing number of GovTech start-ups are emerging. Support for these start-ups includes specialist GovTech funders. About 85% of this projects are a total success giving light to more of this projects being adapted (Arkes, 2015).

Nowadays, developed countries are on the verge of transition. Machine learning and robotics have increased productivity and improved the economies of many nations. Artificial intelligence (AI) is now being used in defence, finance, energy management and transportation. The internet of things (IoT) is made possible by high-speed networks and remote sensors that provide connections between people and businesses. This provides hope that many lives might be greatly improved by automation. Automation has a huge part in the economies of the world and in experience experienced daily (Tetteh, 2012). It allows tasks to be accomplished by fewer support staff, faster and more efficiently. The distribution of automation technologies brings a variety of benefits due to company performance. Such benefits are however varied, reliant on the entities use, and potentially more and more substantial in some cases, significantly superior than reductions of cost linked with substitution of labour. To be effective, automation must be comprehensive and integrated within the whole organization, which may be costly. In addition, automation of the public sector is not a recent phenomenon, and queries about its promised benefits and effects have long accompanied its advances. However, across the world, automation in the public sector is accompanied by concerns of job losses (Baryeh & Ezeka, 2017).

In this community-driven development approach, central government devolves an annual block grant to sub-districts to fund infrastructure projects chosen by villages, of which roads are the most popular (Olken, 2010). Projects are facilitated and managed by local NGOs, which are responsible for managing funds, sourcing materials from the private sector, and building roads with local labour. Available data indicate that by October 2009, the programme had built or rehabilitated over 62,000 kilometers of roads, with wider positive impacts in reducing household vulnerability and decreasing unemployment (World Bank, 2010).

Many countries in sub-Saharan Africa are unable to provide adequate quality and coverage of health services because of economic factors and dwindling resources. This has prompted many countries to advocate for decentralization as a key factor to drive health sector reforms and better service delivery with a view to maximizing the use of available resources in improving access and quality of health care services provided. In South Africa, Continuous service delivery protests have been one of the worst predicaments the post-apartheid South African government has had to face. The failure of the public sector to deliver services to South Africans is therefore no more direct consequence of apartheid. Service delivery protesters decried access to a variety of basic social needs. They revealed, through their acts, the poor levels of service provision by local municipalities. Such protests corroborate what Siddle and Koelble (2012,) regretted as a reminder of almost daily incompetence, corruption, and the collapse of service delivery at local level (Abasilim & Ojeka, 2016).

Africa's middle-class population has increasingly become automated and more receptive to emerging technological trends like building automation. The need to monitor and control building's systems from the press of a button has raised the demand for Building Automation Systems technologies in South Africa, Nigeria in terms of online services provided by the government and parastatals have paved way for more African countries to embrace automation of services. Despite the possible benefits, there is a fear that AI and robots will replace human resource and this will subsequently lead to an increase in poverty levels. A study by a Research Centre asked experts about the effect of emerging technologies and realised that half of these experts (48 percent) envisage a future in which digital agents and robots will have succeeded notable numbers of both workers working physically and in offices—with most of them showing concern that this will result to major increases in income disparity, a great number of people who are unemployable and disruption in the social order. Detailed analyses show that 14 to 54 percent impact on jobs due to automation which confirms these fears. An analysis in Bruegel found that 54 percent of jobs at EU are at risk of being computerized. European data shows that job losses are likely to be notable and people should brace themselves for large scale disruption (Abasilim & Edet, 2015).

Transformation of government activities is the most visible consequences of ICT intervention. For example, the wave of digital government in Canada, Portugal and Australia is represented by an integrated service delivery (ISD) and an opportunity to build the virtual state which has been defined as a system of government in which communication and information flows over the web

rather than bureaucracy or other formal channels. In Singapore, ICT has penetrated all corners of government operations and e-governance has eliminated hierarchical barriers, increased speed, reduced secrecy, expanded information, facilitated direct feed-back and enhanced responsiveness. Self-service technologies have allowed companies to improve their service delivery by allowing their clients to solve their own problems using a technological approach. In this regard, self-service technology in retailing may be defined as an interface which has been enhanced by technology to allow customer involvement in the production of services independently without the involvement of the service employee directly. They are taking the place of face-to-face interactions and relatively making service delivery faster, more convenient and more accurate. Customers are participating in the delivery of service hence organizations are saving costs on employees who could have done such services (African Journal of Business & Management, 2010).

Further, to improve the customer experience, to decrease the expenses which directly or indirectly relate to their employees, to attain customer retention, and to bring technological advancements in their business, SST service quality is being offered by the organization. A variety of interfaces includes Automated Teller Machines (ATMs), Internet banking, automated hotel checkouts, self-service kiosks (digital photo kiosks, information kiosks, interactive music and movie samplers, and electronic kiosks for gifts) grocery self-checkout lanes, and pay-at-pump gas stations. Many factors contribute to detraction or adoption by customers from adopting self-service technologies. Some of these factors affect the satisfaction derived from the technologies by the customer. They include such factors as the cost of products, quality of the services offered by the organization, the design approach of the self-service technology, the rate of failure of the specific self-service product, the available alternatives to the technology, the updating done to the self-service product, and the way advertising of the product by the firm is done (Ragnvald, 2014).

In Kenya the government released in 2009 what is referred to as Innovation in public service delivery in Kenya is expressed in the Kenya Vision 2030: Towards a Globally Competitive and Prosperous Kenya. The Kenya Vision 2030 document underscores science, technology and innovation as a means to foster global competitiveness for wealth creation, national prosperity and a high quality of life for its people. Specifically, the document states that “the government will create and implement an STI policy framework to support Vision 2030.” Further, Articles 10 and 232 of the Constitution of Kenya, 2010 emphasize service delivery that is responsive to the needs of the citizenry. This calls for creativity and innovation. The Government has therefore, made deliberate efforts since 2006 to create awareness and mainstream innovation in the Public Service. The Government then introduced results-oriented management in the year 2004, and designated performance contracting as one of the tools to improve service delivery. Ministries, Government Departments, and Agencies were for the first time being required to work towards set targets, draw out service charters with their clients and compare their performance with the best in the world (ROK, 2013). The government of Kenya has embarked on a demanding project

of automation of major public services and documents, this is aimed at meeting vision 2030 development goals. Automation helps members of the public access services “anywhere” and “everywhere”, it is essential in ensuring saving of cost in the current economic situation across firms in the public, manufacturing and financial sectors (Deloitte, 2017).

According to Samuel and Ondiek (2014), automation guarantees, secure, reliable and automated exchange of data that is sensitive with a big customer network and partners. Automation gives improvement in terms of effectiveness and efficiency of operations carried out thus refining customer service. This helps an organization improve the customer satisfaction score (CSAT). Automation also helps incorporate a self -service technology (SST) channels that are used by clients. Situations where consumers convey services themselves through the utilization of technology is called a self-service facility. In order to improve customer satisfaction automation will assist in improving the response time e.g. solving customer’s query. An automated chat box would assist as many clients would want response almost immediately.

Additionally, automation causes operational costs that are lower and customer service that are improved. Namusonge (2016) established that innovations as a result of adoption of new technology, through new practices, processes, and structural organization implementation, results in the organization reaching its objectives and goals effectively. Automation enables the streamlining of processes and procedures which creates an orderly work flow and prioritization of tasks which include offering responses to customers and reviewing ongoing support situations. Introduction of customer self-service resources, such as interactive knowledge bases and FAQs will give customers the ability to solve certain problems and will provide answers to common questions without there being a live agent. Satisfaction of customers is a combination of the customer’s expectation and the quality of the service provided by the organization. Technology plays an important role in providing satisfaction to customers as it bridges the gap between the actual and expected quality. Technology also makes it possible to provide identical service to all kinds of customers regardless of place and time with no bias. Machines do not suffer from human traits such as fatigue or stress that result in bias.

The National Transport and Security Authority (NTSA) is an association dependent on the Ministry of Transport and Infrastructure. This cooperation was established by the Parliamentary Law, Law 33 of 2012 (NTSA Act 2012) with the objective of opposing the operations of the main road transport departments of Kenya and effectively managing the road transport sub-sector; reduce the loss of life caused by traffic accidents. The mandates of the NTSA are: to provide advice and recommend on matters related to road and vehicle safety, improve and implement road safety measures and manage plans for the road transport sector in accord with the law on transport, ensure the security of supply, reliability, and road transport services, and parliamentary legislation established in the first program, in addition to other laws. It has been over ten years of dealing with a matter concerning road safety, the establishment of Authorities is in accordance with the Road Safety Action Plan 2011-2020 of the United Nations Decade that recommends countries to improve safety road in managing creating associations and assigning

agencies with the adequate capacity to offer better road safety agencies for road safety (ROK, 2013).

In carrying out its main function, the authority has the order of registration and license of all motor vehicles, carry out thorough inspection and certification, complete regulation and monitoring of the public service vehicles, offer advice to the Government on the proposed policies to be implemented on transport sectors, drafting and enforcing strategies for road safety, help create awareness to the members of the public about the road safety, conduct the research and compilation of the reports of matters related to accident occurrence. Poor ICT systems with no linkage between payment and service delivery, was the other major challenge. The digitization system helps clients in saving on time as initially candidates for driving licenses would queue and waste a lot of time at the Kenya Revenue Authority or NTSA offices to pay for a Provisional Driving License, make a test booking or pay for an interim license. The same applicant would have to wait for a minimum of six months for the driving license to be posted to them. Currently, they pay for and obtain the provisional license online through the e-Citizen portal, book the test online at their convenience and on passing the test, leave the test centre with a driving license. Renewal of driving licenses previously meant queuing at National Bank of Kenya or at the Post Office. Today, it takes less than five minutes to renew a driver's license. The dispatch of new drivers' licenses was bedeviled by numerous challenges such as lost documents or inability to reach owners due to the limited postal infrastructure in place. To date, there has been a major increase in the accuracy of data held by the Authority as well as a marked reduction in administrative as well as collection costs, among other benefits. The uptake of the service has been encouraging and consistent (Bennet, 2012).

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policies to be implemented on transport sectors, drafting and enforcing strategies for road safety, help create awareness to the members of the public about the road safety, conduct the research and compilation of the reports of matters related to accident occurrence. Establishes preferred systems that can 10 oversee the training, the tests and license for all the drivers. In addition, this cooperation helps in the formulation of the best curriculum for all driving schools in the country, coordinates with all the individuals and organizations dealing with matter Cabinet Secretary or any other stipulated Law (Bennet, 2012).

STATEMENT OF THE PROBLEM

There are challenges being faced in public service institutions. The National Transport and Safety Authority, Kenya has not been able to fully accomplish its mandates. They have not been able to provide adequate advice and recommend on matters related to road and vehicle safety, improve and implement road safety measures and manage plans for the road transport sector in accord with the law on transport, ensure the security of supply, reliability, and road transport services, and parliamentary legislation established in the first program, in addition to other laws. It has been over ten years of dealing with a matter concerning road safety, the establishment of Authorities is in accordance with the Road Safety Action Plan 2011-2020 of the United Nations Decade that recommends countries to improve safety road in managing creating associations and assigning agencies with the adequate capacity to offer better road safety agencies for road safety. The other challenge has been the lack of adequate enforcement gadgets to validate documentation and help counter any fake documents out there. The implementation of digital payments for services has helped in the government's goal of attaining a cashless economy with the aim of reducing costs, improving service delivery, increasing efficiency in revenue collection, improving the accounting and audit procedures to ensure a proper tracking of the cash flow, hence combating corruption. Even though National Transport and Safety Authority, Kenya have made some effort to adopt automation of services, there is still some inefficiencies experienced in service automation projects such as an automated process for transfer of a motor vehicle the service charter gives a duration of 3 days for one to collect the new logbook not yet very effective. The system indicates the date and time the transfer was initiated, when payments are made, access details of the owners thus accept the transfer or reject the transfer and the final stage will be printing the new logbook where an SMS or email to the new owner once this is done. The approvals will be placed according to the time the transfers were made thus follows order. The same automated process will apply to vehicle inspection, psv badges, RSL applications, reflective number plate application. As customers change and their needs change, it is important to use technology to keep up with the ever-changing society. Service provision is an industry that is highly interactive with customers. In developing economies, customers seem to use technological factors in distinguishing good and bad services and the employees' role is lesser in determining the quality of services for organisations. With Project Management Information System being increasingly used by project managers in all types of industry, not much is known on the characteristics of these systems that contribute to project performance. In

line with information systems experts and already existing body of knowledge and in the description of MIS technology; emphasis is put explicitly on individual/user behavior. Orlikowski and Lacono 2011). Lack of competency on ICT is one of the primary reasons for the failure of service automation project (Kaiser & Ahlemann, 2010). Burke et al (2011) also identified poor skill sets among users as an issue affecting the effective implementation of IT for project performance. Previously, Kinuthia and Were (2015) carried out an investigation into the use of construction management softwares: a survey of construction firms in Nairobi, and found that MS Project was found to be the most widely used software which suggests a significant lag between the construction management software technology that is currently available and what is being used in the Kenyan construction industry. Additionally, the study established that many projects fail due to failure to utilize the appropriate project management software to manage the budget, schedule, project activities and labour. On the other hand, Njenga (2014) studying factors influencing effective and efficient delivery of road construction projects in Kenya in Nairobi county, concluded that the level of adoption of proper technology and appropriate software was wanting. In addition, Wambui, Ombui and Kagiri (2015) pointed to ineffective use of IT infrastructures as the main cause of cost overruns and project delay registered in road construction companies. However, the relationship and influence on customers had not been explicitly explained. Thus, the purpose of this study was to explore the influence of service automation project on customer satisfaction in National Transport and Safety Authority, Kenya.

PURPOSE OF THE STUDY

The purpose of the study was to study the influence of service automation project on customer satisfaction in National Transport and Safety Authority, Kenya.

OBJECTIVES OF THE STUDY

1. To establish the influence of system/software quality on customer satisfaction in the National Transport and Safety Authority.
2. To determine how ease of use of project management information system influence the customer satisfaction in the National Transport and Safety Authority.
3. To establish the extent to which perceived usefulness of the system influence the customer satisfaction in the National Transport and Safety Authority.
4. To determine the influence of quality of the information generated by the system on customer satisfaction in the National Transport and Safety Authority.

LITERATURE REVIEW

Customer Satisfaction

Customer satisfaction as an evaluation of perceived discrepancy between prior expectations and the actual performance of the product. Also defines Customer satisfaction is how customers evaluate the ongoing performance. Customer satisfaction is a customer's reaction to the state of satisfaction, and customer's judgement of satisfaction level. The concept of customer satisfaction and service quality is mutual. Moreover, satisfaction of customer depends upon service quality and service quality is increasingly offered as a strategy by marketers to position themselves more effectively in the marketplace. Therefore, customer satisfaction can be studied with the service quality in mind since level of customer satisfaction is the function of customer expectation level and service quality level provided by the organization. Customer satisfaction is a result of the cognitive and affective evaluation, where some comparison standard is compared to the actual perceived performance. If the perceived performance is less expected customer will be dissatisfied and vice versa. If the perceived expectations are met with performance, customers are in an indifferent or neutral state (Deloitte, 2017).

In general, increased customer satisfaction leads to higher customer retention rate, increases customer repurchase behaviour and ultimately drive higher firm profitability. As a result any business is likely to lose market share, customers and investors if it fails to satisfy customers effectively and efficiently as its competitors is doing. Service providers should provide customer oriented service in order to improve customer satisfaction. It was also found that customers get satisfied with the brand if they get all they need a brand. Researchers have examined how customer satisfaction is affected by service quality but all agree that the relationship between the two is a subject of controversy. Satisfaction is as a result of a past service or quality that made a response. Therefore, assessing overall satisfaction, it is important to identify the key drivers of this satisfaction assessment as they enable managers to ascertain the relative importance of different components of the service. By identifying these components managers are able to focus on those which are of primary importance to consumers, with the aim of improving overall satisfaction (Bennet, 2012).

System/ Software Quality and Customer Satisfaction

The System qualities of any system refer to the non-functional requirements used to evaluate the system performance and when measuring the quality of a system the focus is on the performance characteristics of the system under study. According to Kim (2011, cited in Lee et al., 2011) system qualities of a PMIS includes convenience, simplicity, accuracy, reliability, speed, availability, stability, compatibility and accessibility of the system. PMIS should be flexible enough in order to meet the varying management responsibility as the scope of management varies from project to project (Jung et al., 2011). PMIS that have risk management tools (risk

impact assessment, risk classification and risk ranking) have high quality since they support and ameliorate better decision making (Murungi, Wiener & Marabelli, 2019).

Powerful project management software has become a prerequisite to manage the projects more efficiently and effectively, and aid the project managers in their decision-making (Havelka *et al*, 2010). The advantage of an information system is that it helps to promote productivity by effectively processing and providing necessary information to an organization and supporting their efficient work performance. When project managers have to deal with large and complex projects they tend to use PMIS to make it easier to cope with the difficulty in work and control of project progress. Technology related barriers for effective use of ICT have also been identified. In a survey, it was found that most of the respondents agreed that the quality of IT equipment and infrastructure made available to them was a major factor in ensuring that they used it. A project web site provides a centralized, commonly accessible, reliable means of transmitting and storing project information. But people need a road map to integrate the project web sites as a tool into their work on a daily basis (O'Brien, 2010).

Lee et al. (2011) argue that for efficient work performance among the project team members; PMIS supports three basic functions namely communication (PMIS delivers related knowledge and information promptly between members of the team via either external or internal networks), collaboration (PMIS supports an active cooperative management system among the members) and community (PMIS supports accumulation of related information and data through information sharing). Availability of high-quality information in PMIS is essential since it assist the project manager to make sound and timely decision thus improving on his/her performance.

Owelle (2010) examined the actual contribution of ICT based project management to project success or performance in the context of the construction industry in Kenya. This was based on the quality of these tools, the quality of information output of the tools, the use of the tools and the individual impacts of the ICT based project management tools on project performance and on the construction project managers. This was done through a survey and the analysis of data obtained from construction project managers indicated that ICT based P.M tools contribute significantly to successful project performance. The findings indicated that a few project managers still exchanged project management information using traditional methods. A much larger percentage however, had invested in the ICT based tools and this led to improvements in efficiency and effectiveness which were observed in an increase in the quality of information, better monitoring and planning of activities, better financial controls and better communication. IT based project management tools will help to efficiently manage and keep a track of all these activities in a construction project and a lot more in a small or large construction organizations.

Perceived Usefulness of the System and Customer Satisfaction

Project managers are more eager to use an information system if it provides them with the appropriate level of details in relation to their need in work (Ali & Money, 2009). Nitithamyong

and Skibniewski (2010) suggest that benefits of using WPMS can be categorized into four main areas. These categories include cost reduction and time saving, enhancement of communications and collaboration, improvement of productivity and partnership, and support of e-commerce and the customer.

According to Olawumi and Chan (2019), an important purpose also served by a Project Management Information System is that it can track at the work package level early identification of schedule slippage or significant cost overruns on detailed work areas. Early identification of small problems permits the attention to detail before there are major impacts on higher-order work. This is especially important on large projects or projects that have a very rigorous schedule to meet the enterprise's or customer's goals. The system in place should be prospective and capable of providing intelligence on both the current and probable future progress and status of the project. An effective system provides the information that demonstrates when the project is on track or when it has exceeded the allowable limits of performance, hence it should be able to track the progress of: Tasks, Durations, Costs, committed or spend, and Resources (Eberl, Eberl & Dickerson, 2019).

Despite fast developments in IT and the creation of many IT applications for the construction industry, some issues still hinder the applicability of these systems to construction project management. There is a problem with regard to the diffusion of IT in the construction industry and the absorption of IT into work practices. This includes the level of strategic IT investment by construction industry firms (Alshawi, Goulding, Khosrowshahi, Lou & Underwood, 2009). Other barriers include IT technical shortages, deployment of the system on an ad hoc basis, isolated project management practices, and costly systems (Leskinen, 2010).

Kinuthia (2014) did an investigation into the use of construction management softwares: a survey of construction firms in Nairobi, Kenya. MS Project was found to be the most widely used software and this suggests a significant lag between the construction management software technology that is currently available and what is being used in the Kenyan construction industry. Most of the respondents in the survey indicated there were benefits of using construction management software thereby demonstrating the importance of these softwares as an effective tool for managing construction activities in their firms. These benefits include ease of planning construction activities, scheduling labour and equipment with ease, ensuring accurate estimates, increase of profit with less risk, simplifying document management and reducing the complexity of HR issues. The study concluded that though majority of the construction firms were using software tools to manage their construction projects, the uptake of construction industry specific software products is very low. Secondly, the study concluded that the most significant benefits of using construction management software to the construction firms were ease of planning construction activities together with scheduling labour and equipment with ease.

Alshawi and Ingirige (2012) and Stewart and Mohamed (2004) identify the following benefits of using WPMS: productivity enhancement of communication between project participants,

reduction in project delays, heightened awareness of project issues among all parties, and ease of access to and retrieval of project information. Other advantages include: avoiding delays due to the arrival of updated drawings and documents, reducing visits to sites and travelling time to meetings, avoiding drawing mistakes, reducing time and money spent on disputes, sharing and exchanging project information, automating repetitive routine processes, and eliminating paper reports. This study will focus on project management information systems adoption and Kenyan road construction companies project performance.

Madigan, Louw, Dziennus, Graindorge, Ortega, Graindorge and Merat (2016) examined the acceptance of Automated Road Transport Systems (ARTS): an adaptation of the UTAUT model. As research into innovative forms of automated transportation systems gains momentum, it is important that we develop an understanding of the factors that will impact the adoption of these systems. In an effort to address this issue, the European project CityMobil2 is collecting data around large-scale demonstrations of Automated Road Transport Systems (ARTS) in a number of cities across Europe. For these systems to be successful, user acceptance is vital. The current study used the Unified Theory of Acceptance and Use of Technology (UTAUT) to investigate the factors which might influence acceptance of ARTS vehicles, which were operational in two locations in Europe. The results indicate that the UTAUT constructs of performance expectancy, effort expectancy and social influence were all useful predictors of behavioural intentions to use ARTS, with performance expectancy having the strongest impact.

Ease of Use/Customization and Customer Satisfaction

Project Management Information System apart from other classes of information system is the highly volatile nature of their usage context i.e. project environments, and as such they need to be more customizable in their functionality than most other enterprise information systems (Kappelman et al., 2019). As reported by DeLone and McLean (2012) many researchers have used 'use' as an objective measure of system success. It is important that the generated information is free of complexity, easy to understand and easy for project managers to communicate with the project team(s). The use of PMIS in this study was measured by determining to which extent planning, monitoring, controlling, evaluating and reporting function tools were actually used by the project managers.

Ali and Money (2009) also found empirical evidence that information quality has a significant effect on the use of PMIS. They also found that project managers are more likely to use software that is free of complexity and is easy to understand. The results of this study suggest that project managers, dealing with multiple but less complex projects in a multi project environment, may be discouraged from using PMIS because the time they have to invest to get and to stay acquainted with the software may be more than the benefits from utilizing the systems.

It is very advantageous to use a specialized Project Management Information System for it provides the project team and manager to use to correct amount and thus quality information.

The information requirements for all stakeholders drive the design and development of the Project Management Information System's contents and requirements. The project manager and project team will be the primary users of the system, but it will need to consider stakeholders such as senior management, customers, and functional managers. It provides the framework for collecting information needed to manage the project (plan, organize, evaluate, and control the use of resources on the project), organizing project background information and interface with larger organizational information systems to permit smooth, efficient interchange of information in support of organizational and project objectives and goals, storing and processing project information (Thomsen, 2011). Communicating information in standardized formats supports integration of different project phases. Also, effective information sharing could be achieved through use of common Internet services or shared use of common databases. Standardization of information transfer is very important at national as well as international level and can be achieved by industry level initiatives (Alshawi & Ingirige, 2012).

Bhzad and Abdulsalam (2014) investigated the current problems that the Saudi Aramco and other large companies in the Eastern province, Kingdom of Saudi Arabia (KSA), experience regarding the management of remote construction projects. The field study consists of a questionnaire survey and interviews, and it shows a number of management problems that have profound negative impact on remote projects' performance and process. The study inspects how Advanced Computer based Management Systems (ACMS) would help in sorting out a number of present projects' management problems. Some remote sites' problems can be sorted out using ACMS but other types of problems need efficient management practices and robust planning and design of projects. The current study will be done in Kenya different context from the Saudi Aramco and other large companies in the Eastern province.

Kahura (2013) found out that the use of the software to generate quality information needed by the user (project manager) to perform project tasks helped the project managers perform their tasks in a more professional manner thus increasing the success rate of the project. The three independent variables (quality of software, quality of information output and influence of the user) were transformed to get a single variable PMIS which had a strong and positive correlation (0.954) with the dependent variable (project success). It was therefore concluded that the use of PMIS helped in the achievement of the project success while respecting the projects constraints and meeting the project objectives. The current study will not focus on use of the software to generate quality information needed by the user (project manager) to perform project tasks helped the project managers perform their tasks in a more professional manner thus increasing the success rate of the project rather it will determine the moderating effect of social contexts on the relationship between project management information systems adoption and Kenyan road construction companies project performance: the case of Nairobi City County.

Quality of the Information Generated by the System and Customer Satisfaction

The importance of information has been emphasized for enhancing communication, and the efficient management of construction information has been emerging as an element that determines the success of a project that involves many stakeholders (Ong & Bahar, 2019). Whether or not project managers will use PMIS strongly depends on the quality of the information generated by the PMIS (Ali & Money, 2009).

The quality of information being used to make decision among other things in a project can greatly affect the outcome of the project; if wrong/ inadequate information is generated it will lead to wrong decisions been made and consequently negatively affect the outcome of the project. PMIS should provide project team members with useful information that can be used in decision making by storing, keeping, processing and managing the information resources (Leeuwenberg, 2019). According to Swanson (1974, cited in Lee et al., 2011), the quality of information generated by the PMIS determines the quality of the system itself. Accuracy and timeliness of the information are critical determinants of information quality. Lee et al (2011) concludes important factors that determine the quality of information include ability to understand, accuracy, availability, precise, currency, conciseness, consistency, interpretation and fidelity.

Information provides the intelligence for managing a project. Information must be processed so that decisions can be made and executed with a high degree of assurance so that the results will contribute to the project's performance. In the project planning role, information provides the basis for generating project action plans, schedules, network diagrams, projections, and other elements of planning. Information is essential to promote understanding; establish project objectives, goals, and strategies; develop mechanisms for controls; communicate status; forecast future performance and resources; recognize changes; and reinforce project strategies. Matthew argues the project planning function establishes a structure and a methodology for managing the information resources, which encompass defining, structuring, and organizing project information, anticipating its flow, reviewing information quality, controlling its use and source, and providing a focal point for the project's information policies (DeLone & McLean, 2012).

PMIS information quality is determined by factors as relevance, accuracy, availability, reliability, consistency and timeliness. The information quality was found by Martinsuo and Lehtonen (2011) to lead indirectly, thus not directly, to project success through timelier decision making (Raymond & Bergeron, 2011). Dietrich & Lehtonen (2009) found a strong statistical correlation between the availability, topicality and validity of information, herewith indicating the importance of high-quality information in decision making as an enabler for organizations to successfully implement its strategies through projects.

Saeed and Abdinnour-Helm (2011) about effects of information system characteristics and perceived usefulness on post adoption usage of information systems, high quality information is

regarded as useful because it helps the user in making sound decisions and improves a project manager's work performance. On the contrary, information systems that provide users with unreliable and inaccurate information have an adverse impact on its usefulness. Muema (2014) examined the influence of web-based project management systems on organizational performance with reference Nokia solutions and networks Kenya and found out that that Web Based Cash flow System influence performance of Nokia Solutions and Networks Kenya as it is a great enabler and improves efficiency, adds value in the invoicing and payment process. The study also established that there was a general consensus among the employees on the fact that Web Based Quality Management Systems influence performance of Nokia Solutions and Networks Kenya as it ensures that the different quality gates hinge on themselves which provides a self-sustaining model and complete project lifecycle. The study further concluded that Web Based Reporting System improves visibility by providing a snapshot and feedback to performance in the company which helps speeding up the communication and as a result there is a fast and accurate project controlling.

THEORETICAL FRAMEWORK

Delone and Mclean IS Success Model

DeLone and McLean (1992), introduced the first IS success model which was based on Shannon and Weaver's (1949) theory of communication. DeLone and McLean's model present different features differentiated by the two essential concepts: system quality and information quality. The utilizing of the system has a clear impact on the way individuals accomplish their performance. This impact may eventually effect on the organizational performance. It was among the first studies to impose some order in IS researchers' choices of success measures (Seddon et al., 1999). The model is based on theoretical and empirical research conducted by a number of researchers in the 1970's and 1980's. To construct the model, DeLone and McLean reviewed 100 papers containing empirical IS success measures published in seven publications during 1981-1987. They distilled the resulting huge range of Information system success measures into an integrated view of IS success, represented by the following the six dimensions: System Quality, Information Quality, Information Use, User Satisfaction, Individual Impact and Organizational Impact.

According to Seddon (1997) the critical factor for IS success measurement is not system use but that net benefits should flow from use. He argues that a successful system will provide benefits such as helping the user do more or better work in the same time, or to take less time to achieve as much work of the same quality as was done in the past. Perceived usefulness is therefore a perceptual indicator of the degree to which the stakeholder believes that using a particular system has enhanced his or her job performance. This theory highlights the importance of system/software quality on performance. The study will therefore be ased on this theory to measure the

effect of system/ software quality on customer satisfaction in the National Transport and Safety Authority

Project Management Maturity Model (PMMM)

Drawing from the Project management Maturity Model (PMMM) developed by Kerzner (2001), organizations vary on their maturity hierarchy based on their specific goals, strategies, resource capabilities, scope and needs. Task/technology fit (TTF) theory by its design assumes that the technology will take care of the diverse needs of the system but does not capture in its three tenets the social characteristics of the ever changing existing project team. At whichever level of the PMMM i.e. awareness, understanding or adoption social aspects are very key in full use and integration of the system into the organizational processes. As a forementioned, the gap in operation of the TTF model to successful use of a PMIS informs this study by acknowledging that system implementation must be a dynamic exercise that takes into cognizance an integrated approach to the myriad of IS theories.

Kerzner (2001) described the characteristics of each level of maturity in detail in his book by integrating the information required by management for their decision making which cannot be generated by the PMIS. Appreciating dynamism in theories, the study further redefines TTF to capture management decision making in the context of the social dimension.

Table 1: Summary of Kerzner’s PM Maturity Model Levels

| Maturity levels | General descriptions | Main characteristics |
|------------------------------------|--|---|
| Level 1 Common Language | Organizations recognize the importance of project management and the need for a good understanding of the basic knowledge of PM and its language/terminology. | <input type="checkbox"/> None or sporadic use of project management. <input type="checkbox"/> No Executive-level support. <input type="checkbox"/> No investment or support for project management training. |
| Level 2 Common Processes | Organizations recognize the need for common processes and they make a concerted effort to use project management and develop processes and methodologies to support its effective use. | <input type="checkbox"/> Recognition of benefits of PM. <input type="checkbox"/> Organizational support at all levels. <input type="checkbox"/> Recognition of need for processes/methodologies. <input type="checkbox"/> Recognition of the need for cost control. <input type="checkbox"/> Development of a project management Training Curriculum. |
| Level 3 Singular Methodology | Organizations develop singular methodologies (rather than using multiple methodologies) to best achieve synergy and process control. | <input type="checkbox"/> Total commitment to the concept of PM. <input type="checkbox"/> Integrated processes: Example integrated PM and TQM. <input type="checkbox"/> cooperate culture |

| | | |
|-----------------------------------|---|--|
| Level 4 Benchmarking | Organizations perform benchmarking on a continuous basis against those practiced in similar and non-similar industries. Few selected critical success factors are benchmarked. | <ul style="list-style-type: none"> <input type="checkbox"/> Visible management support at all level. <input type="checkbox"/> Informal project management based upon guidelines and checklists with little paper work, rather than rigid policies and procedures. <input type="checkbox"/> training and education <input type="checkbox"/> Establishment of project office (PO) or a center of excellence (COE) that is dedicated to the project management improvement process <input type="checkbox"/> Performance of both quantitative and qualitative benchmarking <input type="checkbox"/> Creation of lessons learned files and transfer of knowledge to other projects and teams <input type="checkbox"/> Recognition of the need for and implementation of a mentorship program for future project managers <input type="checkbox"/> A corporate-wide understanding that strategic planning for project management is a continuous, ongoing process. |
| Level 5 Continuous improvement | Organizations evaluate the information learned during benchmarking and implement the changes necessary to improve the PM process. Especially on existing Process Improvements, Integrated Process Improvements, and Behavioral, Benchmarking and Managerial Issues. | |

Based on these five levels of project maturity, the researcher while conducting the study will be able to assess every level in order to bring out the effect of PMIS adoption on project performance. In addition, the study will be useful as it will clearly bring out the quality of the information generated by the PMIS/output at every level of the project.

Technology, Organization, and Environment Context (TOE)

The TOE framework was developed in 1990 (Tornatzky & 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. According to Starbuck (1976), technological context describes both the internal and external technologies relevant to the firm. This includes current practices and equipment internal to the firm, as well as the set of available technologies external to the firm (Hage, 1980). Khandwalla (1970) described the organizational context as a measure of scope, size, and managerial structure while environmental context as the arena in which a firm conducts its business: its industry, competitors, and dealings with the government (Tornatzky & Fleischer, 1990).

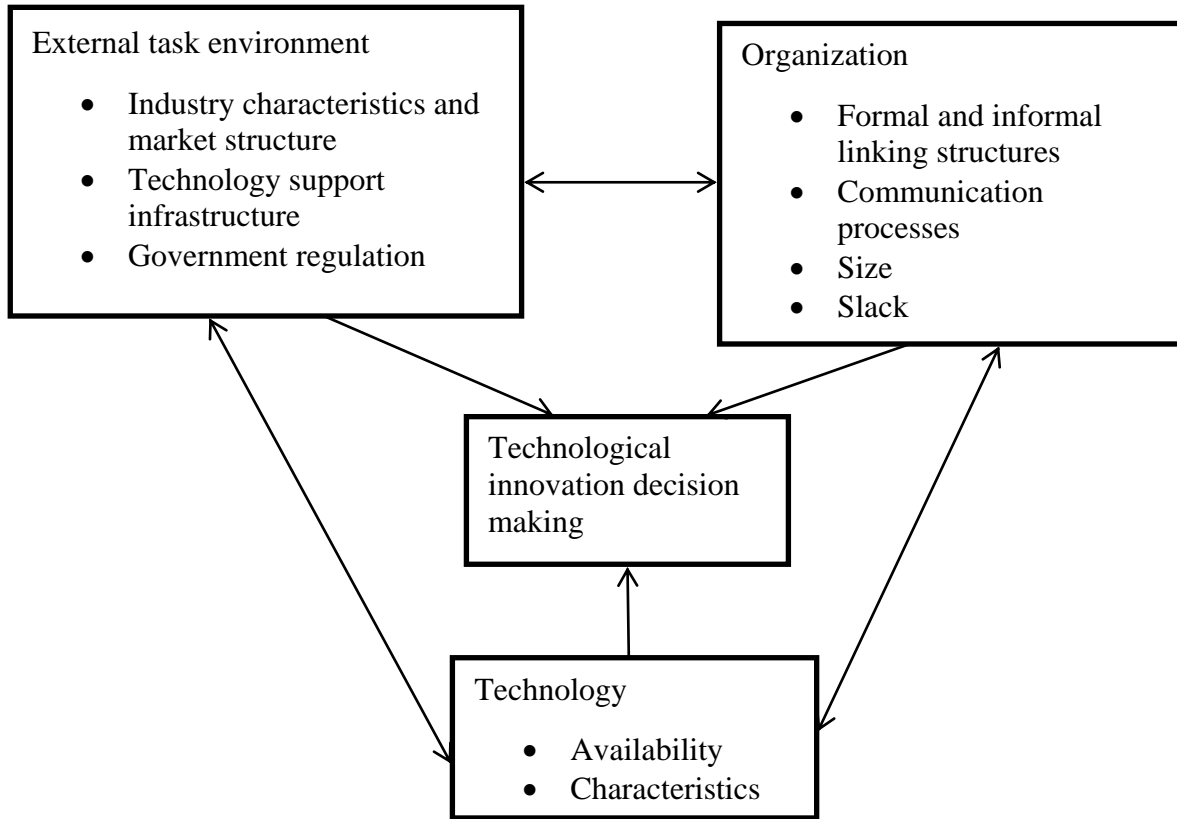


Figure 1: TOE framework (Tornatzky & Fleischer 1990)

The TOE framework as originally presented, and later adapted in IT adoption studies, provides a useful analytical framework that can be used for studying the adoption and assimilation of different types of IT innovation. The TOE framework has a solid theoretical basis, consistent empirical support, and the potential of 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 intrafirm innovation diffusion (Hsu et al., 2006). The theory therefore creates the linkage on how automation project may affect customer satisfaction in the National Transport and Safety Authority.

Institutional Theory

Institutional theory emphasizes that institutional environments are crucial in shaping organizational structure and actions (Scott & Christensen, 1995; Scott 2001). According to the institutional theory, organizational decisions are not driven purely by rational goals of efficiency, but also by social and cultural factors and concerns for legitimacy. Institutions are transported by cultures, structures, and routines and operate at multiple levels. DiMaggio and Powell (1983) posit that firms become more similar due to isomorphic pressures and pressures for legitimacy. This means that firms in the same field tend to become homologous over time, as competitive and customer pressures motivate them to copy industry leaders. For example, rather than making a purely internally driven decision to adopt e-commerce, firms are likely to be induced to adopt and use e-commerce by external isomorphic pressures from competitors, trading partners, customers, and government.

Several studies have taken an institutional approach to e-commerce or EDI diffusion and assimilation (Purvis et al., 2001; Chatterjee et al. 2002, Teo et al., 2003). Some studies combine the TOE framework with the institutional theory (Gibbs & Kraemer, 2004). The institutional theory adds to the environmental context of the TOE framework external pressures, which include pressure from competitors and pressure exerted by trading partners. With regard to institutional theory, quality information among the project stakeholders is essential. It is in light of this theory that the researcher will investigate the effect of quality of the information generated by the PMIS/output on customer satisfaction in the National Transport and Safety Authority.

RESEARCH METHODOLOGY

Research Design

The study adopted a descriptive research design aimed at evaluate the influence of service automation project on customer satisfaction in National Transport and Safety Authority, Kenya. A descriptive design is concerned with determining the frequency with which something occurs or the relationship between variables (Bryman & Bell, 2011). Thus, this approach is suitable for this study, since the study intends to collect comprehensive information through descriptions which was helpful for identifying variables. Bryman and Bell (2011) assert that a descriptive design seeks to get information that describes existing phenomena by asking questions relating to individual perceptions and attitudes.

Target Population

According to Pole and Lampard (2010), a target population is classified as all the members of a given group to which the investigation is related, whereas the accessible population is looked at in terms of those elements in the target population within the reach of the study. The population

for this study comprised of 246 management staff in various department at the National Transport and Safety Authority headquarters.

Sample Size and Sampling Procedure

Sampling frame has been defined as the source from which the sample is drawn being the list of all the elements in the population. Sampling frame was drawn from the National Transport and Safety Authority headquarters in Kenya. Sampling unit was the management staff of the National Transport and Safety Authority). The respondents included the management staff in registration and licensing, road safety, motor vehicle inspection, internal audit, legal, corporate services and ICT departments. Sampling is a deliberate choice of a number of people who are to provide the data from which a study drew conclusions about some larger group whom these people represent. The sample size is a subset of the population that is taken to be representatives of the entire population (Onabanjo, 2010). A sample population of 150 was arrived at by calculating the target population of 246 with a 95% confidence level and an error of 0.05 using the below formula taken from Kothari (2004).

$$n = \frac{z^2 \cdot N \cdot \hat{p}^2}{(N - 1)e^2 + z^2 \hat{p}^2}$$

Where: n = Size of the sample; N = Size of the population and given as 246; e = Acceptable error and given as 0.05; \hat{p} = The standard deviation of the population and given as 0.5 where not known; Z = Standard variant at a confidence level given as 1.96 at 95% confidence level.

Stratified proportionate random sampling technique was used to select the respondents. Stratified random sampling is unbiased sampling method of grouping heterogeneous population into homogenous subsets then making a selection within the individual subset to ensure representativeness. The goal of stratified random sampling is to achieve the desired representation from various sub-groups in the population. In stratified random sampling subjects are selected in such a way that the existing sub-groups in the population are more or less represented in the sample. The method also involves dividing the population into a series of relevant strata, which implies that the sample is likely to be more representative (Saunders, Thornhill & Lewis, 2009).

Data Collection Instruments

Primary data was obtained using self-administered questionnaires. The questionnaire was made up of both open ended and closed ended questions. The open-ended questions were used so as to encourage the respondent to give an in-depth and felt response without feeling held back in illuminating of any information and the closed ended questions allow respondent to respond from limited options that had been stated. According to Saunders, et. al., (2009), the open ended

or unstructured questions allow profound response from the respondents while the closed or structured questions are generally easier to evaluate. The questionnaires were used in an effort to conserve time and money as well as to facilitate an easier analysis as they are in immediate usable form. Structured questionnaires were used to collect data from respondents. Five-point likert scales were used as a measurement level of the variables.

Data Collection Procedure

The administration of the questionnaire to the selected respondents was conducted through drop and pick method. This is necessary to give respondents enough time to give well thought out responses. The researcher booked appointment with respondent organizations at least two days before visiting to administer questionnaires. The researcher personally administered the research instruments to the respondents. This enables the researcher to establish rapport, explain the purpose of the study and the meaning of items that may not be clear as observed by Bryman and Bell (2011).

Data Analysis Processing and Analysis

Data was analyzed using Statistical Package for Social Sciences (SPSS Version 25.0). All the questionnaires received were referenced and items in the questionnaire were coded to facilitate data entry. After data cleaning which entails checking for errors in entry, descriptive statistics such as frequencies, percentages, mean score and standard deviation was estimated for all the quantitative variables and information presented in form of tables and graphs. Descriptive statistics were used because they enable the researcher to meaningfully describe distribution of scores or measurements using few indices. The qualitative data from the open-ended questions were analyzed using conceptual content. Inferential data analysis was done using Pearson correlation coefficient and regression analysis (multiple regression analysis). In many statistical methods in particular parametric measures one presumes (at least approximate) normal distribution of the variables. Therefore for the purposes of using parametric statistics such as Pearson correlation and regression analysis, normal distribution of variables is needed and hence the variables were internally standardized. Multiple regression analysis was used to establish the relations between the independent and dependent variables. Multiple regression tool was used because it is the procedure that uses two or more independent variables to predict a dependent variable. The study used multiple regressions analysis to analyze the collected data. Multiple regression attempts to determine whether a group of variables together predict a given dependent variable (Babbie, 2004). Multiple regression model to be used in this study is given as;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where: Y= Customer satisfaction in National Transport and Safety Authority, Kenya;
 β_0 =constant; $\beta_1, \beta_2, \beta_3$ and β_4 = regression coefficients; X_1 = System / software quality; X_2 =

Perceived usefulness of the system; X_3 = Ease of use / customization; X_4 = Quality of the information generated by the system; ϵ =Error Term

RESEARCH RESULTS

The study sought to examine the influence of System / software quality on customer satisfaction in National Transport and Safety Authority, Kenya. The study found that System / software quality influences customer satisfaction in National Transport and Safety Authority, Kenya greatly. The study revealed that flexibility, security, compatibility/ integration with other systems and accessibility of the system influence customer satisfaction in National Transport and Safety Authority, Kenya to a great extent. The study also established that stability and reliability influence customer satisfaction in National Transport and Safety Authority, Kenya to a moderate extent.

The study sought to assess the influence of perceived usefulness of the system on customer satisfaction in National Transport and Safety Authority, Kenya. The study revealed that perceived usefulness of the system has a moderate effect on customer satisfaction in National Transport and Safety Authority, Kenya. The study established that access to and retrieval of project information, reduction in project delays and sharing and exchanging project information influence customer satisfaction in National Transport and Safety Authority, Kenya to a great extent. Additionally, the study found that enhancement of communications and collaboration and automating repetitive routine processes influence customer satisfaction in National Transport and Safety Authority, Kenya to a moderate extent.

The study sought to establish the influence of Ease of use / Customization on customer satisfaction in National Transport and Safety Authority, Kenya. The study found that Ease of use / Customization has a little effect on customer satisfaction in National Transport and Safety Authority, Kenya. The study established that provision of different range of services or variety of services, convenience, accessible remotely and communication function tools influence customer satisfaction in National Transport and Safety Authority, Kenya to a great extent. The study also established that problem resolution Accuracy influence customer satisfaction in National Transport and Safety Authority, Kenya to a moderate extent but monitoring and controlling function and compatible in many devices influence customer satisfaction in National Transport and Safety Authority, Kenya to a low extent

The study sought to establish the influence of quality of the information generated by the system on customer satisfaction in National Transport and Safety Authority, Kenya. The study established that quality of the information generated by the system have a great effect on customer satisfaction in National Transport and Safety Authority, Kenya. The study found that consistency, currency or timeliness, conciseness and accuracy influence customer satisfaction in National Transport and Safety Authority, Kenya to a moderate extent. The study also found that

comprehensiveness (understandable) influence customer satisfaction in National Transport and Safety Authority, Kenya to a low extent.

INFERENTIAL STATISTICS

Pearson Correlation Analysis

According to Ward (2013), correlation technique was used to analyze the degree of association between two variables. Pearson correlation coefficient was used to determine the strength and the direction of the relationship between the dependent variable and the independent variable. The analysis using Pearson’s product moment correlation was based on the assumption that the data is normally distributed and also because the variables are continuous.

Table 2: Correlation Matrix

| | | Customer satisfaction in National Transport and Safety Authority, Kenya | System / software quality | Perceived usefulness of the system | Ease of use / customization | Quality of the information generated by the system |
|---|---------------------|---|---------------------------|------------------------------------|-----------------------------|--|
| Customer satisfaction in National Transport and Safety Authority, Kenya | Pearson Correlation | 1 | | | | |
| | Sig. (2-tailed) | . | | | | |
| System / software quality | Pearson Correlation | .714 | 1 | | | |
| | Sig. (2-tailed) | .023 | . | | | |
| Perceived usefulness of the system | Pearson Correlation | .611 | .513 | 1 | | |
| | Sig. (2-tailed) | .027 | .026 | . | | |
| Ease of use / customization | Pearson Correlation | .522 | .423 | .0327 | 1 | |
| | Sig. (2-tailed) | .028 | .012 | .018 | . | |
| Quality of the information generated by the system | Pearson Correlation | .672 | .533 | .520 | .431 | 1 |
| | Sig. (2-tailed) | .042 | .009 | .002 | .014 | . |

The study computed into single variables per factor by obtaining the averages of system / software quality, perceived usefulness of the system, ease of use / customization and quality of the information generated by the system. Pearson's correlations analysis was then conducted at 95% confidence interval and 5% confidence level 2-tailed. The table above indicates the correlation matrix between the factors (system / software quality, perceived usefulness of the system, ease of use / customization and quality of the information generated by the system) and customer satisfaction in National Transport and Safety Authority, Kenya.

As per the table there is a positive relationship between customer satisfaction in National Transport and Safety Authority, Kenya and system / software quality as shown by coefficient of 0.714, a positive relationship between customer satisfaction in National Transport and Safety Authority, Kenya and Perceived usefulness of the system as shown by coefficient of 0.611, a positive relationship between customer satisfaction in National Transport and Safety Authority, Kenya and ease of use / customization as expressed by coefficient of 0.522 and a positive relationship between customer satisfaction in National Transport and Safety Authority, Kenya and Quality of the information generated by the system as illustrated by a coefficient of 0.672. This shows all variable were significant in determining the influence of automation of services on customer satisfaction in National Transport and Safety Authority, Kenya.

REGRESSION ANALYSIS

The researcher conducted a multiple regression analysis to test the relationship between the variables. This showed how the dependent variable is influenced by the independent variables.

Table 3: Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|--------------|----------|-----------------|--------------------------|-----------------------------------|
| 1 | 0.889 | 0.790 | 0.782 | 0.737 |

From the findings, the independent variables were statistically significant predicting the dependent variable since adjusted R square was 0.782. This implied that 78.2% variations in customer satisfaction in National Transport and Safety Authority, Kenya are explained by System / software quality, perceived usefulness of the system, Ease of use / Customization, quality of the information generated by the system. Other factors influencing customer satisfaction in National Transport and Safety Authority, Kenya that were not covered in this study accounted for 21.8% which form the basis for further studies.

From the ANOVA Table, p-value was 0.000 and F-calculated was 71.191. Since p-value was less than 0.05 and the F-calculated was greater than F-critical (2.4472), then the regression relationship was significant in determining how System / software quality, perceived usefulness of the system, Ease of use / Customization, quality of the information generated by the system

and social media influenced customer satisfaction in National Transport and Safety Authority, Kenya.

Table 4: ANOVA

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|--------------|----------------|-----|-------------|--------|------|
| 1 Regression | 218.233 | 4 | 54.558 | 97.664 | .000 |
| Residual | 58.098 | 104 | 0.559 | | |
| Total | 276.331 | 108 | | | |

Table 5: Regression Coefficients

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|--|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. Error | Beta | | |
| (Constant) | 0.881 | 0.395 | | 2.230 | .028 |
| System / software quality | 0.861 | 0.461 | 0.721 | 2.385 | .019 |
| Perceived usefulness of the system | 0.733 | 0.309 | 0.672 | 2.372 | .020 |
| Ease of use / Customization | 0.664 | 0.297 | 0.567 | 2.236 | .028 |
| Quality of the information generated by the system | 0.786 | 0.318 | 0.681 | 2.472 | .015 |

The established model for the study was:

$$Y = 0.881 + 0.861X_1 + 0.733X_2 + 0.664X_3 + 0.786X_4$$

Where: Y= Customer satisfaction in National Transport and Safety Authority, Kenya; X₁= System / software quality; X₂= Perceived usefulness of the system; X₃= Ease of use / Customization; X₄= Quality of the information generated by the system

The regression equation above has established that taking (System / software quality, perceived usefulness of the system, Ease of use / Customization and quality of the information generated by the system), customer satisfaction in National Transport and Safety Authority, Kenya will be 0.881. The findings presented also show that increase in the System / software quality leads to 0.861 increase in the score of customer satisfaction in National Transport and Safety Authority, Kenya if all other variables are held constant. The variables was significant since 0.019 is less than 0.05.

Further it was found that if perceived usefulness of the system increases, there is a 0.733 increase in customer satisfaction in National Transport and Safety Authority, Kenya. The variable was significant since 0.02 is less than 0.05. Further, the findings show that a unit increases in the scores of Ease of use / Customization would leads to 0.664 increase in the scores of customer satisfaction in National Transport and Safety Authority, Kenya. The variables was significant since 0.028 is less than 0.05.

The study also found that a unit increase in the scores of quality of the information generated by the system would lead to a 0.786 increase in the scores of customer satisfaction in National Transport and Safety Authority, Kenya. The variable was significant since 0.015 is less than 0.05. Further the study revealed that a unit increase in the scores of social media would lead to a 0.673 increase in the scores of customer satisfaction in National Transport and Safety Authority, Kenya. The variable was significant since 0.016 was less than 0.05.

Overall, System / software quality had the greatest influence on customer satisfaction in National Transport and Safety Authority, Kenya followed by quality of the information generated by the system, then perceived usefulness of the system while Ease of use / Customization had the least influence on the customer satisfaction in National Transport and Safety Authority, Kenya. All the variables were significant since their p-values were less than 0.05.

CONCLUSIONS

The study concluded that System / software quality influence customer satisfaction in National Transport and Safety Authority, Kenya positively and significantly. It was clear that flexibility, security, compatibility/ integration with other systems and accessibility of the system greatly influence customer satisfaction in National Transport and Safety Authority, Kenya. Also stability and reliability were found to moderately influence customer satisfaction in National Transport and Safety Authority, Kenya.

The study concluded that perceived usefulness of the system significantly influence customer satisfaction in National Transport and Safety Authority, Kenya. The study established that access to and retrieval of project information, reduction in project delays and sharing and exchanging project information greatly influence customer satisfaction in National Transport and Safety Authority, Kenya. In addition, it was clear that enhancement of communications and collaboration and automating repetitive routine processes moderately influence customer satisfaction in National Transport and Safety Authority, Kenya.

The study further concluded that Ease of use / Customization significantly influence customer satisfaction in National Transport and Safety Authority, Kenya. It was established that provision of different range of services or variety of services, convenience, accessible remotely and communication function tools greatly influence customer satisfaction in National Transport and Safety Authority, Kenya to a great extent. The study also established that problem resolution accuracy moderately influence customer satisfaction in National Transport and Safety Authority, Kenya.

The study also concluded that quality of the information generated by the system significantly influence customer satisfaction in National Transport and Safety Authority, Kenya. The study established that consistency, currency or timeliness, conciseness and accuracy moderately

influence customer satisfaction in National Transport and Safety Authority, Kenya to a moderate extent. The study also found that comprehensiveness (understandable) lowly influence customer satisfaction in National Transport and Safety Authority, Kenya.

RECOMMENDATIONS

The study found that software quality significantly influences the customer satisfaction in National Transport and Safety Authority. Therefore the study recommends that the management of National Transport and Safety Authority should ensure that the services offered to the clients are of high quality ranging from issuance and renewal of licenses to road inspections. They should also ensure that mechanisms used in service delivery are friendly and understandable to the customers.

The study also established that perceived usefulness of the system influence customer satisfaction in NTSA significantly. Therefore the management of NTSA should conduct public awareness on the usefulness of service automation to change the attitude of the customers that NTSA officials are out to terrorize drivers. They should ensure that their customers understand that automation being effected in all inspection centres in the country is for ensuring road safety and curb corruption in the transport industry.

Further the study recommends that government should continue to create an enabling environment to facilitate continued service innovations by National Transport and Safety Authority. Increased flexibility in the industry and infrastructure should be provided so as to bring about a level playing that will foster creativity.

The study recommends that all automated service quality dimensions be enhanced to help increase customer loyalty. For instance, personalization, accessibility and efficiency which had a positive effect on customer loyalty need to be enhanced further to achieve high level of customer loyalty hence effective customer satisfaction at National Transport and Safety Authority. As National Transport and Safety Authority continue to automate its services and introduce them to customers, customers need to be trained on how to use these technologies to improve the ease of use of the systems and make sure that these technologies adopt security of the personal data as a key aspect.

The National Transport and Safety Authority management should build strong system security to attract customers and develop their trust by ensuring that they meet all the promises delivered to customers during public awareness forums. Since quick response can increase customer satisfaction, personal contact can establish good relationship and trust with customer. It is recommended that the National Transport and Safety Authority should provide live support over the internet instead of support through emails.

REFERENCES

- Al-Hawari, M. & Ward, T. (2006). *The effect of automated service quality on Australian banks financial performance and the mediating role of customer satisfaction*. *Marketing Intelligence & Planning*, 24(2), 127 – 147
- Aliata, Victor & Ojera, Patrick & K. Mise, Jairo. (2016). *Relationship between Service Quality and Customer Satisfaction of Commercial Bank Customers*, Nairobi Kenya. *iJARS International Journal of Management and Corporate Affairs*.
- Anderson, Eugene W. and Claes Fornell (1994), “A *Customer Satisfaction Research Prospectus*,” in *Service Quality: New Directions in Theory and Practice*, Roland T. Rust and Richard L. Oliver, eds. Thousand Oaks, CA: Sage Publications, 241–68.
- Anderson, R. E., & Swaminathan, S. (2011). *Customer satisfaction and loyalty in E-Markets: A PLS path modeling approach*. *The Journal of Marketing Theory and Practice*, 19(2), 221–234.10.2753/MTP1069-6679190207[Taylor & Francis Online],
- Anitsal, I., & Flint, D. J. (2006). *Exploring customers’ perceptions in creating and delivering value: Technology-based self-service as an illustration*. *Services Marketing Quarterly*, 27(1), 57–72.10.1300/J396v27n01_04[Taylor & Francis Online], , [Google Scholar]
- Annette L Gardner and Claire D Brindis. *Advocacy and Policy Change Evaluation: Theory and Practice* (Stanford University Press). 2017; 267.
- August-Wilhelm Scheer (2004), *Business process automation: ARIS in practice*, New York, Springer publishing
- Baker, B. N., Murphy, D. C. and Fisher, D., *Factors Affecting Project Success*, in *Project Management Handbook*, ed. D. I. Cleland and D. R. King. Van Nostrand, New York, 1983, 669±685.
- Bateson, J.E.G. (1985), “Self-Service Consumer: An Exploratory Study,” *Journal of Retailing*, 61 (Fall), 49–76.
- Bettencourt, Lance and Kevin Gwinner (1996), “*Customization of the Service Experience: The Role of the Front line Employee*,” *International Journal in Services Industry Management*, 7 (2), 2–20
- Bolton, Ruth N. (2008), “*A Dynamic Model Of The Duration Of Customer's*
- Bortoli, L., Frino, A., & Jarnecic, E. (2007). *The Impact of Automation on the future Cost of Transaction*. *Journal of financial transformation* .
- Bryan, R. J., Sinkovics, R. R., & Kim, D. (2008). *Information technology and organizational performance within international business-to-business relationships: a review and an integrated conceptual framework*. *International Marketing Review*, 25(5), 563-583.

- Carmines, E. G., & Zeller, R. A. (1979). *Reliability and Validity Assessment (Vol. 17)*. Thousand Oaks, CA: Sage. <https://doi.org/10.4135/9781412985642>
- Cooper, D., & Schindler, P. (2008). *Business research methods (10th ed.)*. New York, McGraw-Hill/Irwin.
- Danford Green (2006), *Factors that influenced Bank of America to adopt the automated teller machines, New York USA*, Longman publishing
- Deloitte (2017). *Automation in Public Sector*. Deloitte
- Doody, Owen & M Doody, Catriona. (2015). *Conducting a pilot study: Case study of a novice researcher. British Journal of Nursing.* 24. 1074-1078. 10.12968/bjon.2015.24.21.1074.
- Ghazizadeh, M., Lee, J. D., & Boyle, L. N. (2012). *Extending the Technology Acceptance Model to assess automation*. *Cognition, Technology & Work*, 14(1), 39-49.
- Gitau, G., Oboko, R., Litondo, K. & Gakuu, C. (2017). *The link between sales force automation system and sales performance in the consumer goods industry in Nairobi, Kenya*. *International Academic Journal of Information Systems and Technology*, 2(1), 36-48
- iqbal, Muhammad & Hassan, Masood & Habibah, Ume. (2018). *Impact of self-service technology (SST) service quality on customer loyalty and behavioral intention: The mediating role of customer satisfaction*. *Cogent Business & Management*.
- Karin A. Venetis, Pervez N. Ghauri, (2004) "*Service quality and customer retention: building long- term relationships*", *European Journal of Marketing*, Vol. 38 Issue: 11/12, pp.1577-1598
- Kothari, C. R. (2004), *Research Methodology: Methods and Techniques*, (Second Edition), New Age International Publishers.
- Krejcie, R.V., & Morgan, D.W. (1970). *Determining Sample Size for Research Activities*. *Educational and Psychological Measurement*, 30, 607-610
- Lim, C.S & Zain, Mohamed. (1999). *Criteria of project success: An exploratory re-examination*. *International Journal of Project Management*. 17. 243-248. 10.1016/S0263-7863(98)00040-4.
- Lin, J.-S. C., & Hsieh, P.-L. (2006). *The role of technology readiness in customers' perception and adoption of self service technologies*. *International Journal of Service Industry Management*, 17(5), 497–517.
- Lin, J.-S. C., & Hsieh, P.-L. (2011). *Assessing the self-service technology encounters: Development and validation of SSTQUAL Scale*. *Journal of Retailing*, 87(2), 194–206.
- Marilyn Healy, Chad Perry, (2000) "*Comprehensive criteria to judge validity and reliability of qualitative research within the realism paradigm*", *Qualitative Market Research*:

An International Journal, Vol. 3 Issue: 3, pp.118-126, Marketing Science, 17 (1), 45-65.

- Mbuvi, L., Namusonge, G., & Arani, W. (2016). *Factors Affecting Automation of Inventory Management in Micro, Small and Medium Enterprises: A Case Study of Kitui County*. International Journal of Academic Research in Business and Social Sciences, 6(1), 15-27.
- Meuter, M. L., Ostrom, A., Roundtree, R. I., & Bitner, M. J. (2000). *Self-service technologies: Understanding customer satisfaction with technology-based service encounters*. Journal of Marketing, 64(3), 50-64.
- Meuter, M. L., Ostrom, A., Roundtree, R. I., & Bitner, M. J. (2000). *Self-service technologies: Understanding customer satisfaction with technology-based service encounters*. Journal of Marketing, 64(3), 50-64.
- Meuter, M.L., A.L. Ostrom, R.I. Roundtree, and M.J. Bitner. 2000. "Self-service technologies: understanding customer satisfaction with technology-based service encounters", *Journal of Marketing*, Vol. 64 No. 3: 50-64.
- Morris, P.W.G. and Hough, G.H. (1987) *The Anatomy of Major Projects—A Study of the Reality of Project Management*.
- Mugenda, O.M. and Mugenda, A.G. (2003) *Research Methods, Quantitative and Qualitative Approaches*. ACT, Nairobi.
- Natarajan, Thamaraiselvan & Arasu, B & Manickavasagam, Sivagnanasundaram. (2010). *Customer's Choice amongst Self Service Technology (SST) Channels in Retail Banking: A Study Using Analytical Hierarchy Process (AHP)*. Journal of Internet Banking and Commerce. 15. 1-16.
- National Transport and Safety Authority (2015). *Citizens' Service Delivery Charter*.
- National Transport and Safety Authority (2016). Online Services. Accessed on 28/03/19 from <http://www.nts.go.ke/index.php>
- Ondiek, Gerald. (2015). *Inventory management automation and performance of supermarkets in western Kenya*.
- Proenca, Joao F. and M.A. Rodrigues. 2011. *A comparison of users and non-users of banking self-service technology in Portugal*. Managing Service Quality. Vol. 21 No. 2: 192-210
- Relationship With A Continuous Service Provider: The Role Of Satisfaction,"
- Sarantakos, S. (1998) *Social Research. 2nd Edition, MacMillan Education Australia*, South Melbourne.
- Zuboff, Shoshana. (2015). *Big other: Surveillance capitalism and the prospects of an information civilization*. Journal of Information Technology. 30. 10.1057/jit.2015.5.