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## Information Technology and Weighbridge Strategy: A Focus on Implementation of One Stop Border Post Initiative

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### **Abstract:**

*Information technology is vital in this ever-changing modern business environment. For a long period, transport companies have raised complaints about delays at the weighbridge as a prerequisite to border clearing, particularly in the COVID-19 era, consequently costing them time and financial loss. Despite attempts to improve efficiency in the clearing process, the delays still persist. While previous studies largely focused on revenue maximization, little was considered on the effect of information technology at the weighbridge as a strategy for implementing a one-stop border post initiative as a key to international business in the current intense competitive world. Specifically, the study examined the effect of information technology at the weighbridge as a strategy for implementing a one-stop border post initiative. Competitive theory guided the study. Secondary data from relevant publications were used, followed by content analysis as a part systematic review of 17 past studies on IT and analyzed by identifying keywords. Findings of this study show that, indeed, IT significantly affects weighbridge performance, as summarized and presented in the model research table. This is intended to add knowledge to existing publications for scholars and government planning purposes.*

**Keywords:** Information technology, Weighbridge strategy & One stop border Post

## 1. Introduction

### 1.1. Background of the Study

#### 1.1.1. Concept of Strategy

Mintzberg & Lampel (1999) defined strategy as the art and science of identifying, assembling, and marshaling troops and equipment with a major goal of defeating an enemy. It originates from the Greek words 'stratos' and 'agein', thus, 'strategos.' In a business context, a plan, play, pattern, and perspective could result in a business competitive advantage (Macmillan Tampoe, 2000). This forms a compressive modern business plan highlighting how an entity intends to achieve its mission and objectives (Bailey, 2007). Nichols (2010) notes that this depends on general, competitive, and corporate strategies the management embraces.

#### 1.1.2. Weighbridge Technology

According to George (1999), technology originates from the Greek word combined with 'techne' and 'Logos', meaning how things are gained. Drexler (2018) defines it as science or knowledge converted to practical use to address a problem or event. It is taken as a process of creating some means for transforming matter-energy and some information to attain certain procedures accelerated by technological phases, with computers and the internet serving as examples. Technology is a system consisting of the technological objects, users of technological objects, and the world view (the perception of things and their value, including how they are looked at globally) (Singh, 2017).

Weighbridge is a truck scale set for weighing bulk goods or loads. It is a purpose-built machine dedicated to weighing large industrial vehicle and their contents, normally for commercial purposes. Weighbridge plays a vital role by providing valuable weight data from both in and outgoing trucks at quarries, port terminals, cement works, and processing plants in the manufacturing and transport sectors, among others (Barbal, 2019). Today versatile instrumentation, user-friendly software, peripheral control equipment, and telecommunication technology improve the scope of weighbridge, thus enlarging their operations, data harvesting, and connectivity. It improves not only on-site traffic flow but also security, particularly on the highway (KeNHA), Weighing stations for tracks, and other heavy commercial vehicles, including buses. They include Pit mounted that has flush ground and pause no restrictions on vehicle movement, and are particularly useful sites for flow in multiple directions. Surface weighbridges, Portable, concrete weighbridges, and many more (Bilancia, 2019).

### 1.1.3. Information Technology (IT)

Kirsten (2019) defined IT as an application of technology in addressing an organization's operational challenge on small, medium, and large scales. It is the use of computers to create, process, store, retrieve, and exchange electronic data and information. It is establishing a communication network for the organization, securing databases, and helping employee troubleshoot problems with their computers or phones to ensure the efficiency and security of business information systems (Dale, 2019). It is a subset of ICT, which is a system comprising all hardware, software, and peripheral equipment run by a group of IT users. This first appeared in the Harvard business review in 1958 by Herold. J. Leavitt and Thomas Whister (*Ali Akbar et al., 2013*). The competitiveness of future economies and entities will greatly rely on how you embrace the development and application of technologies (Evans and Wurster, 2007). This is backed by Mukangu and Ndungu (2016). They asserted that information and communication technology (ICT) application enables organizations to enhance their productivity, both internal and external operational efficiency, mitigate costs, and improve in design process and inventory management practices.

Researchers have found various arguments concerning the correlation between information technology and performance. Some noted that using and adopting information technology does not guarantee high productivity and improved performance (Brynjolfsson, 2003; Brynjolfsson & Hitt, 2000). Henttöten (2016) revealed that there is a positive tendency between knowledge-sharing technologies to improve individual performance in organizations. Some claim that IT has a clear impact on enhancing performance in the organization. Stone et al. (2006) and Johnston et al. (2007) pointed out that information technology is to improve efficiency through information systems on time as adequate information further improves individual performance (Stone et al., 2006).

On the other hand, Laudon & Laudon (2007) justified that even though there are other variables involved, ICT investment does not guarantee investment to commensurate returns. It can maximize the return on investment in information technology by investing in complementary assets. If an organization invests in new technology and fails, Laudon's (2007) search results suggest investing in information technology institutions that guide its investments in parallel in information technology and complementary assets, good output returns from institutions that never invest in these assets.

#### 1.1.3.1. Busia One Stop Border Post (OSBP) Initiative

For countries sharing borders, OSBP is a modern transport concept in all cross-border and international business. Purposely, it facilitates the mobility of labor (people) and goods at customs. Critically, this increases economic development and regional security. Integrates land border management system that sees customs and related government agencies of neighboring states cohesion, provides relevant entry and exit documentation and other associated services from the same premise (office) (Icafrica, 2011). Track drivers clear by obtaining clearance from one point hence reducing travel duration. This initiative aimed at maximizing efficiency and effectiveness. Through this, duplication of border-related services is reduced, cutting down unnecessary costs and time.

Several countries have embraced this by setting up modern border clearing premises, such as Europe, the USA, Canada, Asia, and South America (Icafrica, 2011). In Africa, for instance, Chirundu border of Zambia and Zimbabwe, Wenela OSBP of Namibia and Zambia, Sesheke border OSBP, Oshikango, and Santa Clara Border with Angola in addition, South Africa and Mozambique have made some at Lebombo and Resano Garcia borders. Zimbabwe and Zambia border post in Africa. Rose Mbaki (2013). The East Africa Community adopted the concept by installing Malaba, Namanga-Mirama hills, and Katuna border posts Betty (2014). This OSBP initiative was officially unveiled on 24<sup>th</sup> /Feb/2018 by Presidents of the republic of Kenya, Uhuru Kenyatta, and his counterpart Yoweri Museveni, the president of the republic of Uganda. They combined two national border controls into one for efficiency. William Rappard (2018). USAID (2010). This is intended to harmonize transport and increase competitiveness in border service delivery.

### *1.2. Statement of the Problem*

IT has evolved from the introduction of weighbridge administration around the globe. Unfortunately, transport companies have complained about delays at Busia weighbridge station for a long period. Busia weighbridge has delays causing congestion, and at one point resulted in striking and going slow by transporters and clearing agents at the border (Crowne agent, 2010). To address this, KeNHA tried to intervene and help implement one border post by decongesting tracks at the border. Unfortunately, this weighbridge remained behind in terms of speed volume and compliance targets set by Mombasa Port Community Charter and KeNHA. This put Busia-OSBP on the spot as a player in striving for efficiency in the industry. In addition, it delays the full implementation of the one-stop border post initiative. Unlike other Weighbridges, the 2019 quarter one report indicates that an average of 424 tracks were attended at this station. This is slow compared to 929, 2633, 2410, and 5,752 at Webuye, Gilgil, Mariakani, and Athi River stations, respectively. A negative deviation was also registered from the 6.5 days set by Charter to 10.6 days.

Additionally, compliance at the Busia weighbridge was the lowest at 81 percent in October, decreasing to 75 percent in December 2019. It has a single axle scale as opposed to multideck scales at other weighbridges, which give compliance on axle group weights. This delay costs transport companies time and consequently financial loss. This suggests inefficiency and failure to implement the information technology strategy formulated.

### 1.3. Study Objective

#### 1.3.1. Specific Objective

Specifically, the study intended to establish the effect of information technology on weighbridge as a strategy for implementing a one-stop border post initiative.

#### 1.4. Scope of the Study

This study majorly concentrated on the performance of the Busia weighbridge station from 2016 to December 2021, according to KeNHA reports, publications on information technology, and the one-stop border post initiative from 2010 to date. Specifically, it concentrated on the Busia border, which is in western Kenya and falls under latitude 0°, 25' 59.99 N, and longitude 34° 08' 60.00E. Latitude is the distance North or South of the Equator, and longitude is the distance East or West of the prime meridian.

#### 1.5. Justification of the Study

The study intended to highlight the IT enhancement at the weighbridge, which is a prerequisite to clearing and forwarding at the customs in providing clearing service. It will add to current scholars' publications on IT.

#### 1.6. Conceptual Framework

The conceptual framework is modeled with two components, i.e., independent and dependent variables developed from the theoretical and empirical reviews, thus giving a good starting point as it is based on 'what is known'. Based on the literature review, information technology was tested through Quality IT Management, Hardware and software, and competent data management staff. These are essential IT services whose management critically determines the quality of IT service and, by extension, an organization's performance. Staff training in IT involves teaching employees various information technology aspects, services, and applications, to enhance individual performance with the help of the latest and up-to-date technologies, including training staff on email management, Microsoft office desktop, and internet services. Weighbridge's performance was rested through operational efficiency and timely report.

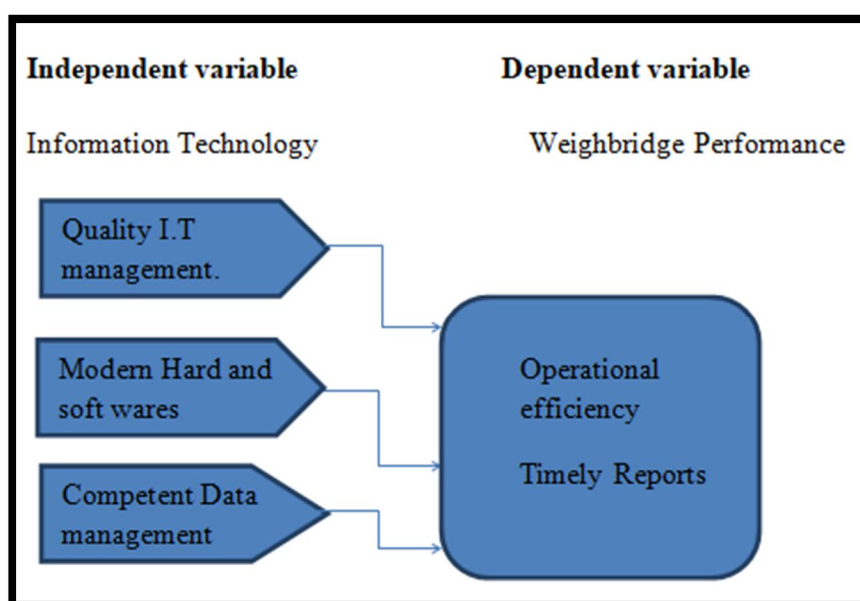


Figure 1: Conceptual Framework  
Source: Agoti (2014) and Modified by Researcher 2022

## 2. Literature Review

### 2.1. Competitive Theory

According to Williams (2003), an organization is better off if all its national, corporate, and local levels entertain decisions related to competitiveness, thus success in entrepreneurial action. This competitive effort should motivate the top-level management vision. Resource allocation, organizational design, and structures should be directed towards developing an entity in market shares and image Vincenzo (2012). Porter (20106) argues that competitiveness is gained if an organization is pushed to a position with an edge to suit the competitive forces and attract customers. It gives an entity and an organization a performance mileage over rivals' ability to produce slightly greater value. This competitiveness is determined by staff training, quality service and innovative technology, and modern and quality leadership factors. Out of these, Bailey (2013) notes that information technology reduces information sharing costs, improves capabilities, and triggers a significant increase in knowledge delivery that entails web-based training, computer-based and multimedia guidance, and e-learning for the e-environment.

Sulieman and Mohammad (2017) studied the Components' IT adoption effect on staff delivery within Kuwait State Interior Ministry. They aimed at assessing the use of the IT components in staff service delivery, using elements of information technology. The study population consisted of 820 managers within the ministry and issued the questionnaire for data to collect data. It was found that, indeed, IT components are important tools in enhancing performance ( $\alpha \leq 0.05$ ). It recommended continuous updating of IT infrastructure development commensurate with the nature of the work to improve the capacity to increase the service.

Gakuubi (2018) assessed a similar study in a case of Nairobi bottlers' logistics operations. It specifically aimed at establishing the impact of ICT on competitive advantage, analyzing the relationships between ICT and logistics firms' performance, and, finally, establishing the challenges of ICT on the success of logistics firms. It targeted 325 logistics department employees subjected to stratified random sampling giving 76 respondents were issued with questionnaires for primary data. Later (SPSS) software was analyzed, and the results were presented in tables and figures. Findings reveal that the use of information technology enables Nairobi Bottlers to achieve a competitive advantage. ERP for efficiency, RFID technology for vehicles and goods tracking leadership characteristics, and transformational leadership were found positive. In recommending staff, we urged them to embrace change and develop resistance control mechanisms to mitigate change resistance.

Kariuki Alex (2015) assessed the impact of IT on business performance: a study of Population service of Kenya as the main aim, purposely intended to analyze the likely relationship of the two variables IT and performance. It was hoped that the outcome would boost HR delivery and explore data management opportunities and communication systems and tools. The Independent variable was information technology use, which was tested through internet data management systems applications, and handheld peripherals. The dependent variable, being performance, was tested through the achievement of objectivity and financial aspects' accountability, Service delivery, efficiency, Quality regulations, and Policies IT training. It was a descriptive and cross-sectional studies survey that targeted 438 PS permanent employees, i.e., directors, senior managers, middle managers, and subordinates. A questionnaire was administered electronically to harvest the primary data that was analyzed using SPSS. The study findings show that respondents had various company IT handheld peripherals, thus enabling their roles. The findings show a correlation between them, with 82.4% thus recommended for a competitive edge.

Elena et al. (2018) studied the relationship between information technology infrastructure on Economic Growth within European Union states and aimed at the effect of using ICT infrastructure on economic growth in European Union (EU) countries from 2000–2017. Panel-data estimation techniques and investigated ICT infrastructure affect economic growth, proxies in their study by GDP per capita as economic indicators. The finding indicates a strong relation between ICT infrastructures on economic growth in the member states. However, the magnitude of the impact varies depending on the technology type. The inflation rate, unemployment rate, the degree of trade openness, government expenditures, and foreign direct investments would positively impact GDP per capita at the EU level. It was similar to both theoretical and empirical predictions. The study showed that these variables (drivers) positively influence EU states.

Cheptorah et al. (2018) did a similar study in the procurement of a case of manufacturing in Kenya to establish the effect of ICT on procurement in the Nzoia sugar factory. Technology was an independent variable and tested through E-Procurement. EDI Procurement performance in manufacturing firms as a dependent variable was examined through cost reduction and competitive, customer satisfaction reduced lead time. Sampled 220 staff, and 181 data tools were returned well-filled. 82.3% was the overall response rate which they considered substantial and adequate enough for the study (Saunders, Lewis, & Thornhill, 2009). Results show that the Nzoia Sugar Company Ltd lacked good ICT infrastructures, had an autocratic leadership style, and rarely complied with relevant practices and policies. Prevailing initiative for employees' competence staff training for the competency was hardly a concern. Thus, managerial style is a critical component here; hence employee involvement is paramount and directly impacts this kind of performance. The variables tested positive and thus recommended.

Lillian Awuor (2015), on a similar study at Sony sugar company, Kenya, aimed at:

- Analyzing the use of ICT to investigate the benefit of ICT,
- Establishing the impact of information technology and
- Establishing challenges influencing ICT adoption on Sony sugar Company operation notably (warehouse)

Radiofrequency, bar coding Internet, and Electronic data interchange-E-portal were independent variables. In contrast, Put-Away, Pick-n Pack, and Dispatch are tested in warehouse operation as dependent variables. The sampling used was stratified, and Questionnaires were issued for primary data collection. The variables turned positive except for ICT adoption, which was weak.

Wael et al. (2017) studied information technology adoption effect on learners' Performance in Saudi Universities. It aimed at establishing the extent of ICT adoption in universities adoption ICT and determining the relationship between ICT adoption and the performance of university students. Four university respondents were engaged, two from King Abdulaziz and two from Damam (DU) University, which had fully adopted ICT. While the other two, namely, Baha University and (BAU) Northern Border University, were still in the process of adopting the ICT. 1000 respondents' sample size containing 250 university learners gave primary data after the stratified sampling technique. SEM software and AMOS-SPSS were applied to test variations in modeling regarding students' academic performance. The findings show significant influence.

Farmansyah (2020), in a similar study in East Java local government, aimed at determining the relationship between ICT, knowledge sharing technologies, and communication technologies toward the organizational performance of local government. Primary data were gathered through questionnaires on 76 Local Apparatus Organizations (LAOs) of

East Java Province. The data were examined using smart Partial Least Squares (PLS) and WarpPLS software version 5.0. ICT infrastructure software knowledge-sharing technologies were found to be significantly positive on local government performance. On the contrary, communication technology did not have an impact on the performance of the East Java Provincial Government. These study results were expected to be useful for the development of accounting.

Bildad Hawi (2016) studied IT as an international terrorist driver in social media in Kenya. It aimed at:

- Exploring the linkage between IT, Social Media, and Terrorism,
- Analyzing the social media roles in the terrorist recruitment of youths in Kenya,
- Investigating the reasons making terrorism ideologies attractive,
- Establishing ways to prevent terrorism ideologies in social media Stratified random sampling was used to select persons from diverse

It targeted persons aged 10-49 years who are active members of the population and can be involved in countering, spreading extremist views, or participating in acts of terror. 40 people from Kibera, Nairobi County, were willing to participate in the study through voluntary consent. Questionnaires were administered to gather data. The program the research utilized was Statistical Packages for Social Sciences. The results show that:

- Social media influences the radicalization of the youth in Kenya, and
- social media affects the decision of deprived youth to participate in terrorism

The provision of alternatives to online terrorist propaganda was called for. Some of the measures that were taken to combat terrorism were:

- Promoting community policing and
- Enhancing youth economic empowerment

Ochieng (2012) studied the role of IT utilization in relation to the cost of sugar cane production in Kenya, specifically the Nyanza region. Specifically, he sought to:

- Analyze IT adoption and its use, determine the likely relationship of these variables (production and cost of food production),
- Establish their efficiency levels, and
- Determine the coping strategy for food insecurity among farmers

Cost of sugar land, labor, capital tested cost of production. Capital and formation construct tested independent variable. Cost of land, labor and capital formation was moderating/mediating variable tested through Cost of Utilization and Cost of Adoption. The dependent variable was checked using the Cost of production (Availability). It targeted 73000 farmers subjected to multistage random sampling giving 384 respondents generated by Cronbach's formula. 82.55% became the response rate, and Cronbach alpha was tested for reliability and validity attained using expert opinion. SEM and multinomial logit tested causal effect while descriptive statistic and coping strategy index tested the extents of coping. The finding shows that information technology embracing was to a great extent, and its utilization was to a small extent. Determine the relationship between sugarcane production cost and food with the following results:

- Cost and ICT adoption significantly moderated effects; (004.0:260.0,  $p=0.004$ )
- Cost of adoption and utilization moderated cost of capital and land in sugarcane production ( $\alpha_1=5.45e-10;p=0.000$ ; and  $\alpha_2=-5.51e-10;p=0.020$ )

Patrick and Ibrahim (2020) analyzed the IT and procurement process on the performance of NHIF. It targeted 154 staff and 57 employees as a sample size from western Kenya that filled out the questionnaires. In this exploratory research design, multiple regressions were used to analyze the results. The results gave ( $\beta = 0.529$ ;  $p<.05$ ), meaning that IT has a significant positive impact on performance. Dorobin (2014) investigated ICT outsourcing.

The performance of humanitarian organizations in Kenya aimed at determining the extent to which humanitarian organizations have outsourced their ICT services to:

- Establish the benefits of ICT outsourcing in humanitarian organizations, Establish the challenges of outsourcing in humanitarian organizations and
- Establish the impact of ICT outsourcing on the performance of humanitarian organizations

It was meant to provide insight to managers and other concerned personnel of humanitarian organizations on whether to in-source or outsource ICT services. The research project would help the Humanitarian organizations make informed decisions based on the evidence of the target population of 27 Humanitarian organizations in Kenya. 135 employees were randomly selected through purposive sampling as the sample size in the selection of respondents for the study. The study was a descriptive survey targeting 27 humanitarian entities in Kenya. It sampled 135 staff randomly selected using the purposive sampling technique in selecting respondents for the study. The study administered structured questionnaires to collect data. The study result shows that ICT outsourcing plays a role in the performance of humanitarian organizations and, to a large extent, assists in improvement.

George Chijaji (2014), in a similar study in the case of the ministry of transport in Kenya, sought to establish the influence of ICT as a strategic tool for competitiveness. The interview guide was used for respondents who were basically policymakers and senior officers in the ministry. Content analysis was used to analyze data. The study finding showed high usage of information technology with noted numerous benefits. It included reduced costs in supply chain management, efficient communication, and improved security arising from the application of biometric authentication scanners in all entrances and exits to monitor when users report to and leave from workplace.

Additionally, the study established that IT had enabled the ministry to:

- Better manage both human and technical resources,
- Introduce a tracking system to manage its fleet of vehicles, plant, and equipment

On the other hand, Government Human Resource Information Systems (GHIS) made it possible for staff to receive their pay-slips electronically via computers and smartphones. The system had an online leave application module. Easy access to information both to staff and customers was noted as one of the major cost reduction areas as the ministry continued to move closer to a full paperless organization. Integration of various departments had been integrated through network connectivity competitiveness for the ministry. The study thus established that the adoption of IT as a strategic tool greatly influenced the competitiveness of the ministry of transport and infrastructure in the republic of Kenya.

Kiragu (2012), in ICT and procurement process in Kenya, aimed to:

- Determine the kind of information systems used in the procurement process in NSE listed companies,
- Assess the effect of ICT on the procurement processes and
- Determine the challenges in implementing ICT for the procurement process in companies listed on Nairobi Securities Exchange

This study was meant to benefit manufacturing, both public and private sector providing entities. It is intended to improve the realization of the influence of ICT on the procurement process. Risk assessments in procurement, specification, and approval mechanism were assessed. Selection of method, issue of bid documents, bidding document, evaluation of bids tested signing of the contract. Contract administrations were independent variables, while the signing of the contract, contract administration, and IT were dependent variables. It was a descriptive survey. The study population comprised 62 companies listed in Nairobi Securities Exchange, procurement and IT managers Agricultural, Telecommunication and 24 technologies, Banking, Insurance, Investment, and Manufacturing and allied, used stratified random sampling sample of 37 employees from a population of 124 questionnaires. The finding shows a significant positive result of the variable. Thus the use of ICT in procurement processes is recommended.

Ali et al. (2012) assessed, in a similar study, a case of engineering firms within Iran. They applied a causal in this descriptive research design to establish the relationship between information technology, organization structure, and performance. Structural Equation Modeling was administered to incorporate the three constructs (IT, OS, and FP). Questionnaires were issued to two hundred and fifty Tehran, Iran. Eight questionnaires were not returned, but 242 were returned. Cluster sampling was followed, where 37.3 percent of these were executive/senior. The study found that all variables tested through different constructs had an impact on FP.

Macharia et al. (2015) studied the effect of IT on performance in logistic organizations in Nairobi city as their main objective. Specifically, it aimed at determining how levels of IT usage affect performance, establishing the contributions of cargo tracking and security system on success, analyzing how the use of IT on customer service delivery system affect performance, and determining whether integration of information influences the performance of these firms. Instrumental and substantive theories guided the study. The Independent variable was tested through the level of IT usage, security, and tracking customer service provision, while the performance of logistic firms took care of the dependent variable. In this descriptive survey design study, 10 firms in the logistic sector in Nairobi provided primary data. To measure the use of IT in companies, a four scales model was developed, whereas the performance in companies was measured by use of three scale model and aggregated into three and four scales measuring. SPSS was administered to analyze data, and findings were displayed in charts and tables. It focused on 34 out of 120 registered Small and medium logistics cargo tracking fleet management offering firms within the city. Reports by shipper's council EA, (2014) by then. Only top and middle-level management of these selected firms were interviewed. The respondent rate was 93%. 10% (ranging from 18-26 years) and 20% (ranging from 36-45 years) were to cater to demographic concerns. 70% of these were privately owned, 20% were owned by foreigners, whereas 10% were owned by the government. Based on the statistical results shown, there was a strong relationship between the variables and performance. The study concluded that information use among these firms indeed counts.

Mohammad et al. (2014) studied the effects of IT on employees, a case of Shiraz in Iran, and aimed at examining how IT affects the productivity of human resources. The exploratory interview was done with participants. Human resource was a dependent variable noted in the spirit of motivation, innovation, and creativity. Spirit of competitiveness of human resource productivity identified by the researcher tested. Human resource gender education and experience tested the independent variable. While HR Productivity was Human dependent variable considered. A total of 430 agencies were sampled. The study revealed significant positive between key variables, which were IT and human resource productivity.

Sangwon (2016) did a similar study (IT), but within advancing regional connectivity, a case of Asia and the Pacific under the United Nations Economic and social commission. The study aimed at identifying major emerging ICTs through desktop research, reviewing their characteristics and implications through literature review. The research survey addressed questions on the relevance of selected ICTs to international trade, transport, and logistics for advancing regional Connectivity, policy and technological requirements for their application, success factors for their application, and policy considerations for governments in promoting the application of ICT in international trade, transport, and logistics for regional connectivity about developing economies or states. It focused on selected states in the Asian sub-region where the application of ICTs had been successful by then. The finding confirms the relevance of certain emerging ICTs to regional connectivity despite variations in relevance. Several policies and technological requirements for the successful application of the selected ICTs were applied. Success factors, including the use of international standards and standards-based technologies, availability of relevant technologies, business processes, and re-engineering of skilled human resources government policy, will be utilized as a basis for further innovative application of basic ICT technical requirements as well as a certain level of ICT deployment and deployment. It was realized that it would not be easy for developing countries to narrow the gaps between counties with advanced ICT applications through innovative applications of ICT due to such reasons as the inherent limitations of ICT. Lack of skilled human resources, Irrelevant technologies, insufficient ICT network, and system infrastructure, lack of opportunity to build cross-sectorial ICT eco-

system and synergy, inadequate opportunity to learn from enough trial and error processes, and short-sighted ICT R&D practices. Limit ICT in controlling/harnessing informal practices in businesses. The study had several limitations in generalizing implications and recommended further studies. Nonetheless, the implication from the findings of the study on capacity building worth the attention of international organizations and development partners in designing and implementing capacity are building programs on ICT application and innovation for developing countries. Capacity building, catering creation of ICT eco-system and virtuous circle require long-term human resource development, the opportunity for iterative implementation on both holistic or cross-sectoral application ICTs, and making people become part of ICT-based innovation itself.

James Ochieng et al. (2011) studied the relationship between Information communication technology and the performance of small firms in Kisumu city–Kenya. This was a survey design that involved 144 only small enterprises that employed between five and twenty staff/workers. This was out of a population of 481 questionnaires, and interviews were used in data collection. A purposive sampling technique was administered to determine which directors to participate in in-depth interview data. This was a survey design that involved 144 only small enterprises that employed between five and twenty staff/workers. This was out of a population of 481 questionnaires, and interviews were used in data collection. A purposive sampling technique was administered to determine which directors to participate in in-depth interviews.

Source/Author & Year	Study Title	Objectives/ Purpose	Level of Evidence	Major Findings
Suliman and Mohammad (2017)	The effect of ICT Components adoption on employees' performance	They aimed to examine the adoption of ICT elements on HR output	Five-point Likert Scale Elements comprised both hardware and software databases and HR elements (820 managers. -41 instruments Hardware (HA1-.7959HA5), software (SO1-.7159SO6), .6675 Human elements (NE1-NE5).7656,	Significantly Positive. ( $\alpha \leq 0.05$ )
Kariuki (2015)	Impact of ICT on performance a case of population services Kenya	To determine the relationship between ICT performance of Population Service of Kenya.	Questionnaire was administered electronically. SPSS applied correlation between variables was 82.4%	82.4% positive
Elena et al. (2018)	Impact of ICT Infrastructure on economic growth	Establishing and evaluating the likely impact of ICT on European union countries' economic growth from 2000 to 2017	Panel data estimation technique applied	ICT infrastructures are relevant to economic growth
Cheptora, N. C Osoro, A., Musau, E. G. (2018).	ICT and procurement in Kenya	Establishing the impact of information communication technology on the procurement of a case of Nzoia sugar company.	Descriptive design The target population of 526 respondents Sample of 220 employees. 181 questionnaires returned & completely filled (82.3%)	All variables tested positive, thus concluding that ICT has a positive effect on such an organization in Kenya
Lilian A wuor (2015)	ICT adoption and Warehouse operation: Sony Sugar Company Kenya	Establish the benefit of ICT on warehouse operations To analyze the effect of ICT on warehouse operation To identify challenges of ICT adoption	Sample size of 150 Stratified random sampling. Primary data collected. And analyzed using regression and correlation technique	Utilization of ICT was positive at Sony sugar company, Kenya Internet system-Mean was 4.2. Bar-coding and scanning Mean was 3.6
Wael et al. (2017)	Use of ICT Adoption On learners' performance in Saudi University	To determine the extent to which universities' ICT adoption analyzes the relationship between ICT adoption and performance	The sample size had 1000 respondents, each university providing 250, and purposive sampling was done for personal bias-free data -Close-ended questionnaire Content validity of questionnaire one expert. AMOS-SPSS was used for the analysis of data. AMOS-SPSS was used to analyze.	Significant positive

Source/Author & Year	Study Title	Objectives/ Purpose	Level of Evidence	Major Findings
Farmansyah (2020).	Information and communication technology in firms' performance in local government	The study aimed to determine the relationship of knowledge sharing technology, ICT Infrastructure, and software communication technologies on the performance of local government.	Data were examined using smart Partial Least Squares (PLS) with the assistance of WarpPLS software version 5.0.	Knowledge-sharing technologies and ICT infrastructure have a positive relationship with performance. In comparison, communication technology does not have a relationship with the performance of the East Java Provincial Government.
Bildad Hawi (2016)	ICT as a driver of international terrorism: A case of social media and youth in Kenya	It aimed at exploring the linkage between IT social media play in terrorism on youth	Questionnaires were administered to gather data from 40 Kibra respondents (Primary data), and SPSS applied to analyze the collected data	Indeed Information technology is a driver of international terrorism.
Patrick and Ibrahim (2020).	Impact of IT and procurement process on performance on NHIF in western Kenya.	Determining the influence of IT as applied in procurement processes on NHIF Performance.	The targeted population was 154 employees, and the sample size was 57 staff that filled out questionnaires. The exploratory research design was used, and multiple regression.	Positive with ( $\beta=0.529$ ; $p<0.5$ ).
Dorobin (2014)	An investigation on ICT outsourcing and performance. A case of humanitarian organization – Kenya	Determine the extent to which humanitarian organizations have outsourced their ICT services -Establish the benefits of ICT outsourcing in humanitarian organizations Establish the challenges of outsourcing in humanitarian organizations and Establish the effect on the performance of humanitarian organizations.	Target population 27 humanitarian organizations – Kenya. 135 employees were selected through purposive sampling, and questionnaires were used to harvest primary data.	The finding showed high usage of information technology with noted numerous benefits. It included reduced costs in supply chain management, efficient communication, and improved security arising from the application of biometric authentication scanners in all entrances and exists to monitor when users report to and leave the workplace.
Kiragu (2012)	Influence of ICT on procurement processes in NSE listed companies in Kenya	Determined the type of information systems used, Analyze the effect of IT on process Establish the impact of IT on the procurement process in NSE-listed companies in Kenya.	The descriptive survey, study population 62 IT managers from NSE. A sample of 37 got stratified by random sampling. The number of questionnaires was 124 for primary data.	The study concluded that Information technology and the Procurement process are significantly influential in Kenya. The ability to use IT to improve a contracting process is determined by the entity's ability to maintain data and one that uses it.
Dinesh (2018)	Information Communication Technologies for Research and Academic Development in India	Information Communication Technologies for Research and Academic Development in India	Top Asian Rankings for 2015 based on certain selected performance indicators Primary data collected and analyzed From high Asian ranking institutions of (2015)	Significantly positive. In improving transparency and accountability in research and academics.



Source/Author & Year	Study Title	Objectives/ Purpose	Level of Evidence	Major Findings
Macharia N., Wilson. M., A Iravo, O., Ibrahim T., Kepha O., (2015)	Influence of IT on Logistic firms Nairobi.	Determining how levels of IT usage affect performance, establishing Effect of cargo tracking on security system and performance Analyzing how the use of IT in customer service delivery system affect performance, Establish how the integration of information affects the performance of these firms.	Descriptive survey Analyzed Cross-referencing was used Simple random sampling technique. Ran and analyzed using SPSS for the result.	Positive results: ANOVA results for the relationship were $F=2.729$ and $P=0.000$ 10 out of 30 logistics firm use IT and is relevant. The level of IT usage among these firms improves service delivery performance.
Mohammad et al., (2014)	Influence of IT on Logistics firms in Nairobi Kenya.	Determining the levels of IT use and its impact on performance, Establishing the effect of cargo tracking on business, Analyzing how the use of IT in customer service delivery system affect performance,	Exploratory interviews with the participants were scheduled. 430 agencies were sampled.	Positively significant
Sangwon Lim (2016)	The role of (ICT) in advancing regional connectivity A case of UNESCO, the united Economic and Social Commission.	The study aimed at identifying major emerging ICTs through desktop research.	Exploratory	The finding confirms the relevance of certain emerging ICTs to regional connectivity despite variations in relevance.
James O., O, Charles N., A., and Fredrick O., A (2011)	Relationship between use of Information Communication Technologies (ICT) on the performance of small firms in Kisumu-Kenya	Analyzed the relationship between the adoption of ICT and the performance of small firms /organizations.	A survey research design of 144 small enterprises from 481 (population). 30% of the target population. Purposive sampling technique Chi-square test ( $\chi^2$ ), a stated technique, tested the relationship (association) between variables (ICT adoption and firms)	Confirms positive. Performance level 0.05 $X^2= 27.22; df=9; p=0.05$ $is = 16.919$
Gakuubi (2018)	Effect of ICT on organizations' performance – Nairobi bottlers	Determine the impact of IT application on competitiveness. Establish the relationship between ICT and performance and Analyze challenges of ICT on the performance of logistic firms.	The target was 325 logistics department employees. Sample size of 76 respondents in this descriptive study Results are presented in tables and figures. Data analyzed by SPSS.	Findings reveal that the use of information technology enables Nairobi Bottlers' performance. achieve

Table 1: Research Model

### 3. Methodology

#### 3.1. Study Design

This was a systematic review of the past studies that were done. It considered keywords as IT and performance. Others were weighbridge and one-stop border posts in 17 studies seen above. Basically, content analysis as part of the systematic review was opted. Hand coding was done on identified studies to be done to achieve the objective of this study. The secondary data on theoretical review was not to be limited in terms of time. However, past studies only ranged from 2010 to 2021 and comprised 23 percent internet sources, 12 percent student papers, and 7 percent publication sources.

The following criterion was used in each of the databases:

- Suitable journals were selected using 'subject criteria' where selected articles were searched with 'information technology' and 'performance' in the title
- 'Information technology' was searched in the title to select only relevant articles

To exclude irrelevances and further narrow down to a number of articles, the following filter was used as well.

The only articles included were those IT mentioned in the title of the paper. The idea was to include an article with the main IT theme, which deals with a concept in a non-trivial and non-marginal way.

The earliest article available was in 2011, while the latest was in 2020.

A summary of reviewed studies was shown in the research model table in order of author with year, study title, the purpose, level of evidence relied on for findings, and finally, the respective major study output or results as seen above. A research table is a useful tool for organizing and analyzing research after David (2021).

#### 4. Results, Conclusions, and Recommendations

##### 4.1. Results

Specifically, the study examined the effect of information technology at the weighbridge as a strategy for implementing a one-stop border post initiative. The results reveal that more than 50 percent of all 17 reviewed studies agreed that, indeed, IT is vital in the general performance of an organization/ weighbridge performance. The study agrees with the survey findings of James O., O, Charles N., A., and Fredrick O., A (2011), Kiragu (2012), Mohammad et al. (2014), Dorobin (2014), Kariuki (2015), Iravo, O., Ibrahim T., Kepha O., (2015), Lilian Awuor (2015) Sangwon Lim (2016), Bildad Hawi (2016), Wael et al., (2017), Sulieman and Mohammad (2017), Elena et al. (2018), Cheptora, N. C. Osoro, A., Musau, E. G. (2018), Dinesh (2018), Gakuubi (2018), Macharia N., Wilson. M., A Farmansyah (2020) and Patrick and Ibrahim (2020). To a large extent, the use of ICT services improves the performance of humanitarian organizations/ staff, and to a large extent, ICT improves humanitarian/ staff performance.

##### 4.2. Conclusions

The study agrees with the hypotheses that information technology influences weighbridge operation and thus success in one-stop border posts. The study results reveal that most respondents rated data security risk as the highest challenge in their respective studies. In the current study, a review was the main challenge.

##### 4.3. Recommendations

I recommend using Quality IT Management, relevant hard and soft wares, and ensuring modern, competent data management staff in all weighbridge stations to implement one-stop border post initiatives.

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