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INFORMATION TECHNOLOGY CAPABILITY, ADOPTION, LOGISTICS SERVICE QUALITY AND THE PERFORMANCE OF THIRD PARTY LOGISTICS PROVIDERS

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ABSTRACT: *The purpose of the study was to examine the relationships between IT capability, IT adoption, logistics service quality and performance of third party logistics firms in Uganda. The study was prompted by the delays in customs clearance; bureaucratic systems and lengthy cargo forwarding processes largely of manual nature that are evident among the activities of the third party logistics providers in Uganda. This could be attributed to lack of IT capability, low IT adoption and poor logistics service quality. A cross sectional data was collected from a sample of 80 registered clearing and forwarding firms in Uganda selected from a population of 109 firms using a simple random sampling technique. Data was collected using a close ended questionnaire. The results indicate significant positive relationships between IT capability, IT adoption, logistics service quality and performance of third party logistics firms. Findings also revealed that IT adoption and logistics service quality are significant predictors of the performance of the third party logistics providers. However, IT capability was found not to be a significant predictor of performance of third party logistics providers. Findings further revealed that IT adoption was a better significant predictor of the performance of third party logistics providers than logistics service quality. The research recommends that clearing and forwarding firms in Uganda need to adopt IT quicker and increase logistics service quality in order to improve on the performances of their clearing and forwarding operations especially in the areas of documentation, cargo tracking, warehousing, and shipment operations.*

KEYWRDS: Information Technology (IT), IT Adoption, IT Capability, Service Quality, Logistics, Uganda

INTRODUCTION

The logistics industry has become one of the most influential of the 21st century. Companies are rapidly focusing on outsourcing third party logistics companies. This enables these firms to reduce costs, reduce time to the market as well as investments in staff. The performance of the third party logistics is based on how satisfied the customer is, the level of logistics service quality provided and also on the level of Information Technological (IT) capability available (Zaryab & Rana, 2012).

According to Lalonde (1994) IT capability is necessary to support logistics processes. Lai et al. (2008) defines IT capability as a firm's ability to mobilize and deploy IT based resources in combination or co-present with other resources. Zaryab (2012) also stresses that IT capability is a critical factor to third party logistics if they are to incorporate systems with their customers to increase satisfaction and performance of the business. IT capability potentially improves logistics service quality, which leads to cost effectiveness, flexibility, and logistics efficiency.

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Logistics service quality deals with understanding customer satisfaction from the perceptions and actual customer service on the various attributes (Parasuraman et al., 1985). It provides the building blocks to create a customer based foundation (Lambert et al., 1990).

IT capability is cited as one of the capabilities that a logistics firm needs to achieve world class business performance (Lai et al., 2008). It is argued for improved logistics efficiency, effectiveness, and flexibility, and these have a bearing on superior products, service quality, and financial performance of third party logistics. The proper use of IT in supply chain integration can improve provision of services to supply chain partners that can have an ultimate effect on the customer satisfaction and business performance. It can also increase operational competitiveness, flexibility and productivity of the third party logistics (Zaryab, 2012). Logistics users are able to streamline their global logistics processes by using the IT of third party logistics firms such as inter organizational information systems (IOS) that facilitate communication among partners within the supply chain (Lai et al., 2008).

IT capability is one of the most critical factors affecting the decision of a logistics firm to outsource to a third party logistics firm. Despite this observation however, the role of the IT capability in logistics firms has not drawn much attention. Lewis and Talalayevsky (2000) concluded that lack of consideration of IT and logistics service quality as main components of logistics providing solutions are a major deficiency of the third party logistics literature. The way third party logistics develop their IT capability and how IT capability affects their competitive advantage deserve further investigation.

IT adoption refers to the perceived usefulness and perceived ease of use (Davis 1986). IT basically involves use of computers to process information, provide storage of data and retrieve data (Yusuf, 2005). Third party logistic service providers use IT to deliver services to their customers. Logistic performance involves improved marketing, financial, and operational efficiencies. Performance leads to efficiency, effectiveness, and flexibility of third party logistics firms in performing their duties. Benjamin, Thomas, Hazen and Terry, (2008) indicate that efficiency is a measure of productivity in which what has been accomplished is measured against what is possible to accomplish. Effectiveness is the degree to which business objectives are being achieved within specified time to adapt to changing environment.

There is still sparse and disjointed evidence on the role of IT capability, adoption and logistics service quality in business performance of third party logistics firms. In fact, some managers still caution the use of IT in logistics management due to risk of organizational damage, lack of trained personnel, lack of tracking system, lack of cargo handling equipment, lack of varied effectiveness, restrictions in licensing and high technology cost. This is possibly why the rate of using more IT by current logistics users has a low acceptance rate despite its perceived positive impact (Zaryab, 2012). This is not different in Uganda given the fact that Africa as a whole still lags behind in adoption and usage of ICT in general business and by third party logistics in particular. This study therefore seeks to investigate the relationships between IT capability, IT adoption, logistics service quality and the performance of third party logistics in Kampala. The rest of this article is organized as follows: The next section reviews literature, develops hypotheses, and proposes the research model. The subsequent two sections present methodology and data analysis results. Finally, the article concludes by discussing the findings, implications, limitations, and directions for future research.

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LITERATURE REVIEW

This section defines key concepts and presents a review of the existing scholarly literature on the relationship between IT capability, IT adoption, logistics service quality and performance of third party logistics firms.

Third Party Logistics (3PLs)

According to Yang (2011), third –party logistics is the use of contracted firm(s) to supply services in the planning, implementation and controlling of the flow and storage of raw materials, in-process inventory, finished goods, and related information throughout the supply chain. It involves the use of external companies to perform logistic functions that have traditionally been performed within an organization (Skjoett-Larsen, 2000). Thus the functions performed by the third party may involve the entire logistics process or selected activities within the supply chain.

Performance of Third Party Logistics and its Dimension

According to pieto et al. (2012), performance of a third party firm refers to improved marketing, financial, and operational efficiencies. They add that the above definition closely links performance to three key concepts i.e. efficiency, effectiveness, and flexibility of third party logistics firms in performing their duties. Benjamin, Thomas, Hazen, & Terry, (2008) indicate that efficiency is a measure of productivity in which what has been accomplished is measured against what is possible to accomplish. Effectiveness is the degree to which business objectives are being achieved within specified time to adapt to changing environment. Any firm that succeeds on the above three concepts automatically achieves good performance in the industry. Despite previous research, no study examines how IT Capability, IT Adoption, Logistics service quality) affect Performance of third party Logistics providers.

IT Capability and its Dimensions

According to Lai et al. (2008), capability is where by a firm is highly organized and managed in a way that enables it to exploit the full potential of its resources. In relation to this, IT capability is the ability to mobilize and deploy IT-based resources in combination or co-present with other resources and capabilities (Lai et al., 2008). It is the extent to which a firm embeds a certain set of technologies in its processes and makes them fully operational for being used (Pieto et al., 2012). It therefore involves the application of and ability to use hard ware, software, and network to enhance information flow and facilitate decisions (Lai et al., 2008).

IT Capability has been defined in terms of its managerial capabilities (Sambamurthy & Zmud, 1992; Ross, Beath, & Goodhue, 1996) and technical skills (Teo & King, 1997). IT Capabilities are looked at as a firm`s ability to acquire, deploy, and leverage its IT investment in combination with other resources and capabilities as well as to support and enhance its distinctive competencies and skills in other business functions in order to achieve business objectives through its implementations (Sambamurthy & Zmud, 1992; Ross, Beath, &Goodhue, 1996). It is viewed as a multidimensional construct which consists of six models (Sabharwal & Kirs, 1994; Sabherwal, 1999; Byrd & Turner, 2000). The six models have been summarized into IT architecture, IT infrastructure, IT Human resource, and IT relationship resource.

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IT Adoption and its Dimensions

IT adoption refers to the perceived usefulness and perceived ease of use (Davis 1989). It basically involves use of computers to process information, provide storage of data, and retrieve data (Yusuf, 2005). Third party logistic service providers use IT to deliver services to their customers. The use of IT enhances quality of service which increases productivity, quick response and reliable services (kashorda et al., 2007). The use of computerized data and data management system in clearing and forwarding companies, shipping lines, freight forwarders has greatly increased service quality over the years (Grandlund & Mouritsen, 2003). The clearing processes have changed over the years from manual systems to computerized and this has increased their competitive advantage (Manson et al, 2001).

However, when firms introduce new IT in their operations, it is sometimes followed by resistance by the employees or the users of the system. This could be due to lack of knowledge on how the system is operated. But where the users gain access on how to operate the system they welcome it with ease (Davis, 1986). In the Technology Acceptance Model (TAM), Davis (1989) described the two elements of IT adoption as the perceived usefulness and perceived ease of use. The TAM suggests that when users are presented with new software package, perceived usefulness and perceived ease of use influence their decisions about how and when they will use the new software.

The benefits of the firm adopting IT in its operation include; creation of employment opportunities, strengthening of industrial linkage, promotion of flexibility, reduced lead time, reduced complaints, increased customer satisfaction, increased output, and innovation (Harvie, & Lee, 2001). To sustain business, firms need to be supported by modern technology such as ASYCUDA World currently used by URA to process entries and cause revenue stability in the country (Moy & Lee, 2002). The clearing and forwarding firms require adopting a wide range of technological skills in order to help them operate in very different markets and social environment (Hallberg, 2000). Rapid changes have occurred in the clearing and forwarding industry leading to increased competition by many third party logistics due to product innovation.

Additionally, IT advancement has increased customer demands in service delivery, customers requiring quick service delivery and short led time. The firms need to accept and adopt new methods of technological development so as to improve service delivery (Venkatesh & Davis, 2000). When firms adopt IT they are likely to gain potential to accelerate service delivery to their customers, reduce delays, provide services at less cost, motivate customers, and create economic viability (Al-Ansari, 2006). A firm achieves competitive advantage if it's able to provide service at a right time, at a less cost, but of the better quality (Atkinson, 1999).

Logistics Service Quality and its Dimensions

According to Lai et al. (2008), logistics service quality relates to a firm's ability to provide the fast and reliable delivery of products and services , maintain superior order accuracy, and respond to customer inquiries, complaints, and claims in a prompt manner. Service quality emerges as a result of the service occurred in customer's expectations related to perceived service quality and the performance of the perceived service (Taskin et al., 2010).

Logistics service quality is described using a five dimensional construct of perceived service quality tangibles, reliability, responsiveness, assurance, and empathy as the instrument for measuring service quality (Parasuraman et al., 1988; Zeithamlet et al., 1990). Reliability -

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depends on handling customer`s services problems, performing services right the first time, provide services at the promised time, and maintaining error free record (Parasuraman et al., 1988). Responsiveness is the willingness of employees to provide service (Parasuraman et al., 1985). Empathy -is caring and individual attention the firm provides its customers (Parasuraman et al., 1985). Assurance is the knowledge and courtesy of employees and their ability to inspire trust and confidence while tangibility is the appearance of physical facilities, equipment, personnel, and written materials (Parasuraman et al., 1985).

IT Capability and Logistics Service Quality

IT capability is vital in logistics management as it sets the competitive edge of the third party logistics firms to utilize and combine IT-based resources with other resources which highly determines their business performance (Lai et al., 2008). IT capability can contribute to a firm's competitive advantage by providing cost leadership and product differentiation. Service quality can potentially improve with building IT capability. IT capability significantly affects three important dimensions of the competitive advantage of these firms; namely reducing costs, providing innovative and customized services, and improving logistics service quality (Bowersox, Closs, & Cooper, 2002). Top management view IT capability as a critical factor to the organization success as it improves logistics service quality and hence increases customer satisfaction (Jarvenpaa & Ives, 1991). *Therefore, from this discussion it can be hypothesized that, H1: There is a significant positive relationship between IT capability and logistics service quality.*

IT Adoption and Logistic Service Quality

Rapid changes in technology and the wide range of technologies available on the market entail difficulties in deciding the efficient technology for the needs of many businesses (Longenecker & Petty, 20000). Due to continuous development of technology, the market is changing every day. Therefore firms have to conduct continuous innovation to adopt the changing market, which is crucial for the firms to grow quickly (Miller, 2005). Technology, a key component in strategic development is inevitable in the industrial process (Thomas & Sparkkes, 2000). The technology development is the driving force on the clearing and forwarding firms to invest on novel technology more than their capacities (Kruger, 2000). Improved ability of firms to gain access to the available knowledge and experiences will lead to increased competencies of the firm; can enhance their market share for global and local markets as rapid progress in technology constrains them to restructure their business process.

Several studies indicate that the enhancement of customer service and increased productivity and process quality is dependent on IT adoption (Bowersox and Daugherty, 1995; Calder &Marr, 1998; James et al., 2004; Lau et al., 2006; Chow et al., 2007; & Liu et al., 2010). Closs et al. (1996) and Piplani et al. (2004) suggest that the adoption of IT by third party logistics enables them to acquire specific knowledge and skills that is core to their business. Lai (2004) suggests that the skills acquired via technological innovation are employed by third party logistics to offer a set of services to their clients. Evangelista and Sweeney (2006) also identify IT as an enabler for developing logistics service quality that third party logistics can directly offer to the market via the provision of value added services. *Therefore, based on this discussion it can be hypothesized that, H2: There is a significant positive relationship between IT adoption and logistics service quality.*

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Logistics Service Quality and Performance of Third Party Logistics

According to Lai et al. (2008), logistics service quality relates to a firm's ability to provide the fast and reliable delivery of products and services, maintain superior order accuracy, and respond to customer inquiries, complaints, and claims in a prompt manner. Service quality emerges as a result of the service occurred in customer's expectations related to perceived service quality and the performance of the perceived service (Taskin et al., 2010). According to pieto et al. (2012), performance of third party logistics firm refers to improved marketing, financial, and operational efficiencies.

Millen et al. (1999) found that logistics service quality significantly improved customer satisfaction. Vazquez and Casielles et al. (2002) confirms that logistics service quality in supply physical distribution activities has the greatest influence on customer satisfaction. Lai et al. (2008) argues that efficiency, effectiveness, and flexibility are the components which if achieved, automatically translate into quality services and good performance of a firm. *Therefore, based on this discussion it can be hypothesized that, H3: There is a significant positive relationship between logistics service quality and performance of the third party logistics.*

IT Capability and Performance of Third Party Logistics

Thomas, Hazen et al. and Lai et al. (2008), suggest that IT capability has great potential to induce efficiency, effectiveness and flexibility of third party logistics firms. According to Lalonde, (1994), IT is one of the productive tools that enhance competence while decreasing the cost among clearing firms, thus increasing on their profitability. IT increases operational competitiveness, flexibility and productivity of third party logistics (zaryab, 2012). IT automates the basic operational process of a logistics service provider thus improving of the efficiency of the firm, (Piplani, Pokhararel, & Tan, 2004). According to Zaryab (2012) using advanced IT in the supply chain enables clearing firms to timely and effectively respond to customer's needs and requirements thus meeting customer expectations. It also reduces the lead time of orders and improves service level of enterprises.

According to Lai et al. (2008), IT capability enables information flow and facilitates quick decision making required in business transactions. It contributes to a firm's competitive advantage by providing cost leadership and product differentiation (Lai et al., 2008). Rahman and Selen (2011) show that IT capability leads to reliable and consistent services, reduces costs, and shortens delivery lead time. It also allows companies to plan and control all the resources required for collecting, making, sending, and entering customer orders in production and services companies (Saura, 2008). All this translates into improved effectiveness of the third party logistics.

IT capability can make the major contribution in achieving superior performance and sustain competitive advantage over competitors (Global Logistics Research Team, 1995). The relationship between IT capability and performance of third party logistics was established by the Michigan State University study (1995). They investigated how the firms use IT capability to achieve competitive superiority by constantly meeting customer expectations better than competitors. The study model empirically demonstrated a positive association between superior IT capability and performance improvements. Other studies also support the positive effect that IT capability has on certain dimensions of a firm`s performance explained by profitability and growth. *Therefore, based on this foregoing debate it can be hypothesized that,*

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H4: There is a significant positive relationship between IT capability and performance of third party logistics.

IT Adoption and Performance of Third Party Logistics

IT adoption is vital to ensure that the managers have the timely information necessary to cope with growing changes in the process and product design to fulfill the customer requirements and manage these tasks effectively (Zaryab, 2012). For instance firms using EDI are significantly more able to accommodate special or abnormal requests and events than firms that do not use EDI. Garrido and Azevedo et al. (2007) assert that firms frequently integrate internet technology to redesign process in ways that strengthen their competitive advantage. IT adoption forces firms to find new ways to expand the markets in which they compete, to attract and retain customers by customizing products and services, and to restructure their business strategy to obtain competitive advantage. Thus, a firm's ability to adapt to changing environment improves greatly with adoption of IT. The high IT spend of logistics providers is usually triggered by specific requests from customers who are aware that increased third party logistics performance is a result of IT adoption and will benefit the logistics performance of entire supply chain (Capgemini, 2007). Turnover in these firms may be partially explained on the basis of their technology advancement (Norek, & Langley, 2007). Wang et al. (2008) successfully links third party logistics financial performance to IT advantages and IT involvement. He ascertained that third party logistics firms that had introduced IT enabled innovations were likely to experience sales growth and an increased market share. *Therefore, based on this discussion it can be hypothesized that, H5: There is a significant positive relationship between IT adoption and performance of third party logistics.*

In line with the above literature review, it is clear that vast literature related to the study variables have been conducted. It has been observed however, that most of the established relationships have been conducted in a developed environment. Also, no aggregative study had been conducted to examine their collective impact of IT capability, IT adoption and logistics service quality on the performance of third party logistics which are gaining momentum. It is pertinent that the pattern of their relationships is tested in a context of a developing country for more logical and worldwide conclusion as well as the application of these relationships.

METHODOLOGY

This section entails the methodology that was used in conducting the research. It consists of the research design, the study population, the sampling procedure and sample size, the variables and their measurements, reliability and validity of research instruments, data collection methods, data processing and analysis procedures and techniques.

Research Design

The study adopted a cross sectional survey design. Since the study was meant to test rather than generate theory, it adopted a quantitative approach which focused on describing and drawing inferences from the findings on the relationships between IT capability, IT adoption and logistics service quality on performance of third party logistics firms in Uganda. Correlation and Regression analysis approaches were used to investigate the relationships between the variables and the extent to which the independent variables explained performance of third party logistics firms in Uganda.

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Study population and sample size

According to URA website (2015) there were 271 registered clearing and forwarding firms in Uganda out of which 109 are operating and have their headquarters in Kampala. Using Krejcie and Morgan (1970) Tables of sample determination, 80 firms were found to appropriately match the population size of 109 and selected for this study. The study was conducted in Kampala Central Region, and specifically focused on the clearing and forwarding firms that were fully registered by Uganda Revenue Authority (URA) to offer services.

Among the clearing and forwarding firms, the target respondents included clearing and forwarding staff at different levels i.e. executives, managers, departmental heads and any other staff involved in freight forwarding business. For each firm at least two staffs were targeted. Overall 160 questionnaires were distributed out of which 80 usable responses were returned and used for data analysis. This represents a response rate of 50%.

Sampling technique

The above sample was selected using simple random sampling technique among staff since it offers equal chance to all elements for inclusion in the sample.

Primary Data

Primary data was sourced from respondents who manage clearing and forwarding firms because it gives the original perceptions of respondents as regards the performance of third party logistics at a given time of collecting data.

Secondary Data

Secondary data relevant to the variables under investigation was obtained from published journal articles from publishers like the emerald publishing group. Previous dissertations by master's students from the university library and reports provided by the website of the regulating body of clearing and forwarding companies (Uganda Freight Forwarders Association) were also reviewed. Other secondary sources that were used included Text books, newspapers and conference proceedings.

Data Collection methods

The study mainly used primary data which was obtained from registered clearing and forwarding firms through a questionnaire. Questionnaires were close ended and anchored on a 5 likert scale. Questionnaire was preferred because of the convenience to busy people like those in clearing and forwarding firms, than any other survey method. They were also easy to fill in given that the target population was largely literate and able to read and understand questions. The questionnaires were delivered to staff and hand-picked after they had been filled. This is slightly different from the developed world where most surveys are web-based. There are still a couple of challenges with internet in Uganda and web based surveys which are not usually successful and give poor response rates.

Validity and Reliability of the instrument

The researcher sought approval of the data collection instrument from at least two university professors and thereafter the tool was pre-tested among a section of the intended respondents. Inappropriate questions were revised. The Content Validity Index and the Cronbach's Alpha

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value were used to measure the Validity and Reliability of the instrument respectively. The results Table 1 show that the instrument was both reliable and valid since the coefficients were above 0.6 in either case.

Table 1: Cronbach Alpha Values and Content Validity Indices

Variable	***Anchor***	***Cronbach Alpha Coefficient***	***Content Validity Index***
IT Capability	5 Point	0.93	0.89
IT Adoption	5 Point	0.92	0.88
Logistics Service Quality	5 Point	0.90	0.85
Performance of 3PL	5 Point	0.90	0.85

Source: Primary Data

Measurement of variables

The variables were measured as shown in the Table 2.

Table 2: Measurement of variables

Variables	**Measures**	**Authors**
IT Capability	IT Architecture, IT Infrastructure, IT Human Resource & IT R/ship	Bharadwaj et al. (1979); Ross, Beath,& Goodhue, (1996
IT Adoption	Perceived usefulness and perceived Ease of use	Davis et al. (1989)
Logistic Service Quality	Tangible, reliability, empathy, responsiveness and assurance	Parasuraman et al. (1988)
Performance of 3pls	Efficiency, effectiveness & flexibility	Lai et al. (2008)

Data processing and Analysis

Data obtained using questionnaires were compiled, sorted, classified, edited, and entered into the computer and tabulated using statistical package for social scientists (SPSS) programme. The data was summarized and displayed into frequencies and percentages. The researcher ran a correlation analysis to establish the strength of the relationship between the study variables. A multiple regression analysis was conducted to establish the variation in the dependent variable that is due to the various independent variables.

RESULTS

Sample characteristics

To present sample characteristics, frequency distributions were used to indicate variations of respondents based on gender, Age, Education Level, Position held in the organization, and Logistics services provided. The sample characteristics were presented basing on the responses

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from selected list of registered Clearing and forwarding firms in Kampala. The results are presented Table 3.

Table 3: Sample characteristics

	Frequency	Percent
Male	51	63.8
Female	29	36.3
Total	80	100.0

Age	Frequency	Percent
19-29	22	27.5
30-39	44	55.0
40-49	12	15.0
50 and above	2	2.5
Total	80	100.0

Education Level	Frequency	Percent
Post graduate degree	10	12.5
Bachelor's degree	49	61.3
Diploma	17	21.3
Certificate	4	5.0
Total	80	100.0

Position	Frequency	Percent
Director	3	3.8
Manager	9	11.3
Officer	45	56.3
Others	23	28.8
Total	80	100.0

Logistics services provided	Frequency	Percent
Ware housing	11	13.8
Transport	8	10.0
Packaging	5	6.3
Containerization	4	5.0
Distributor	14	17.5
Inventory management	5	6.3
Document processing	33	41.3
Total	80	100.0

As per the results, there were 51 male and 29 female respondents. This means that more female are employed by the Clearing Firms compared to the number of female as showed by 63.8% and 36.3% respectively. The results show that the majority of the respondents (55%) were aged between 30-39 years. The least number of respondents (2.5%) were 50 years and above. The rest of the respondents who were between 19-29 represented 27.5% whereas the respondents who were in the age bracket of 40-49 were 15%. This possibly suggests that Clearing Firms employ more agents who are between 30 to 39 years of age and the least employed age bracket is 50 years and above. The reason for this could be due to many movements involved in many customs stations and lifting of some goods during operations of clearing and forwarding. It appears most clearing firms prefer employing the energetic youth employees but also the other reason of having few respondents of 50 and above years could be due to the fact that most of the employees in this age bracket are at the strategic management level of the organization and always have busy schedules, which could not allow them to fully participate in the study because they are not easy to access.

The results show that the majority of the respondents (61.3) have attained degree while the least have attained certificates (5%). The rest of the respondents were diploma holders (21.3%) and post graduate degrees (12.5%). The findings indicate that Clearing and forwarding firms employ majority of the agents who have attained a Bachelor's degree of education and employ

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few certificate qualified agents. The results indicate that most of the work executed in these firms requires a person who holds a degree because it involves a lot of paper work and some critical thinking. In terms of the position held in the organization, show that the majority of the respondents were Clearing and forwarding officers (56.3%) whereas the least of the respondents were directors (3.8). The rest of the respondents were managers (11.3%) and others (28.8%). Due to the busy schedules of top managers, directors were not easily accessible in most cases and were always delegating the filling of the questionnaire to managers, officers and others.

In regard to logistics services provided, results show that document processing is the most offered by 41.3% compared to the seven logistics service provided by the Firms. The least offered is containerization (5.0%). The rest of the respondents were transport (10%), packaging (6.3%) distributors (5%) inventory management (41.3%). The higher frequency distribution of document processing possibly indicates that most of the clearing and forwarding work is dominated by paper work such as declaration processing and clearing for goods for taxes etc.

Factor analysis

An exploratory factor analysis was conducted using the principal components analysis (PCA) approach with varimax rotation to establish the underlying pattern in the data. PCA was chosen because it is the simplest of the true eigenvector-based multivariate analyses that often reveals the internal structure of the data in a way that best explains the variance by providing the user with a lower-dimensional picture when viewed from its most informative viewpoint. Varimax rotation generally yields more stable results and is easier to interpret (Ahimbisibwe, 2014). A number of meaningful factors explaining a larger percentage of the common item variance emerged and all items loaded cleanly on the hypothesized constructs exceeding 0.50 as presented in the following tables.

Factor analysis results for IT capability yielded four components which were interpreted as IT Architecture (variance=34.09%), IT relationship resource (variance=10.8%), IT infrastructure (variance=10.6%), IT Human resource (variance=10.1%). The quadruple factors explained 65.59% of the total variance in IT Capability as shown in Table 4.

Table 4: Factor analysis for IT Capability

	IT Architectur	IT Relationshi p Resource	IT Infrastruct ure	IT Human Resource
There is consistency of IT policies throughout our firm	.774			
Our IT and Business managers consult with each other regularly on business and technical decisions	.807			
There is integration of business strategic planning and IT planning	.816			
Our IT and business executive share a vision for how IT will support the Business	.643			
Our IT staff regularly invests in technical, business and interpersonal training	.772			

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There is consistency of IT application portfolios which are a set of different types of IT application with business processes	.856			
We restructure business work processes to leverage opportunity	.744			
We restructure IT work processes to leverage opportunities	.727			
There is clarity of vision regarding how IT contributes to business value	.772			
Management has the ability to understand value of IT investment	.758			
Our IT dept ensure ownership of the business with respect to e-commerce activities		.694		
The IT dept of our organization maintains close relationship with business management		.782		
We have multi-disciplinary teams to blend business and technology expertise		.563		
We have good relationship between line management and IT service providers		.777		
We have good line management sponsorship of IT initiative		.734		
There is a climate that encouraging risk taking and experimentation with IT		.759		
There is a climate that nature IT project championship		.758		
We have technology based links with customers		.748		
We have technology based links with suppliers		.799		
We use IT based entrepreneurial collaborations with external partners		.629		
Our firm employs IT specialists on full time			.713	
Our staff frequently undergo IT refresher training			.718	
We often uses IT facilities such as Computers, fax, Printers, and phones to transact with customers			.623	
We have a computer laboratory; Direct trade input (DTIs) for employees instructions and data capture			.676	
Our computer systems are linked with servers to network to all customs stations for customs entry processing			.772	
Our firm employs an IT expert to maintain Database system			.726	
We provide our services to customers 24hours a day			.697	
Our firm employs IT trained personnel in some departments				.766
Our firm employs IT specialists on full time				.827
Our staff frequently undergo IT refresher training				.886
We have employed IT Expert to monitor and manage our database system				.828
The firm has an IT expert who maintains the IT facility to interface with customs operations				.819
Our IT manager carries out regular evaluation and control of systems				.784
Our staff does regular systems development practices				.743
Our staff carries out planning for security control, standards compliance, and disaster recovery				.753
Eigen Value	**2.92**	**2.84**	**2.82**	**2.82**
Variance %	**34.9**	**10.8**	**10.6**	**10.1**
Cumulative %	**34.9**	**44.89**	**55.49**	**65.59**

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Factor analysis results for IT adoption yielded two components which were interpreted as perceived usefulness (variance=51.68%) and perceived ease of use (variance=24.31%). The dual factors explained 75.99% of the total variation in IT Adoption as shown in Table 5.

Table 5: Factor analysis for IT Adoption

	Perceived Usefulness	**Perceived Ease of Use**
Using IT enables us to utilize services more quickly	.631	
Using IT simplify entry processing by our Firm	.727	
IT offers freedom, flexibility and convenience in the time of document processing	.728	
Using the IT is better than processing the documents manually	.722	
Using IT has reduced lining at the Customs business centre (CBC).	.775	
Using the IT is satisfying and enjoyable	.690	
We recommend everybody to use IT due to its usefulness	.787	
Learning how to use IT is easy	.633	
We need continuous learning in order to use IT effectively	.831	
We use IT for making inquiries	.807	
IT provides reliable security controls we need	.675	
We rarely forget our pass words	.672	
We save time in entry processing when using IT	.759	
It is easy to use IT software		.751
Using IT does not require a lot of training		.753
Learning to use IT is easy for us		.685
Simplicity involved in using IT encourages us to use the system		.720
IT is user friendly		.744
IT services are easily accessible to all registered clearing and forwarding Firms		.706
We have a positive attitude towards using IT		.775
IT enhances our interaction with customs stations		.826
We find it easy to do what we want to do with IT		.692
We find IT use to be flexible to interact with		.644
We find it easy to become skillful at using IT		.305
Overall we find IT system easy to use		.784
Eigen Value	**3.32**	**3.29**
Variance %	**51.68**	**24.31**
Cumulative %	**51.68**	**75.99**

Factor analysis results for logistics service quality yielded four components which were interpreted as Reliability (variance=23.78%), Empathy (variance=12.31%), Tangibility (variance=11.8%), responsiveness (variance=11.6%) and Assurance (variance=11.6%). The five factors explained 68.59% of the total variance in logistics service quality as shown in Table 6.

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Table 6: Factor analysis for Logistics services quality

	Reliability	Empathy	Tangibility	Responsiveness	Assurance
We keep our records accurately	.604				
Our employees provide services at the promised time	.718				
Our Firm has modern equipment to process customer's orders	.695				
We employ professional trained personnel to handle customer's requests	.607				
We deliver services to customers satisfactorily through internet system	.696				
We provide convenient service charges to customers	.644				
Customers feel safe when transacting with us	.696				
We provide financial and technical advice to clients on customs operations		.770			
Our employees understand customer specific needs		.714			
Our employees are polite and friendly staff to customers		.638			
Our firm promptly responds to customer's inquiries and orders on time			.739		
Our Employees are willing to help customers			.673		
We use IT facilities to provide quick information to customers			.750		
We use computerized systems to shorten transaction time			.653		
We use on line system to handle customer request on time			.691		
We provide fast and reliable services			.693		
We provide reliable services using on line system			.621		
We have a quicker computerized information processing system and optimum decision				.671	
We provide an automatic billing system and updates customers on time				.753	
The overall quality of services provided by our Firm is excellent.				.619	
Customers are satisfied with the products and services provided by our firm				.696	
We show sincere interest to solve customers' problem					.570
We ensure accuracy and completeness of information					.652
Eigen Value	**2.95**	**2.95**	**2.84**	**2.82**	**2.81**
Variance %	**23.78**	**12.31**	**11.8**	**11.6**	**11.6**
Cumulative %	**23.78**	**35.09**	**46.89**	**57.49**	**68.59**

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Factor analysis results for third party logistics performance yielded four components which were interpreted as efficiency (variance=28.33 %) and effectiveness (variance= 22.11%). The dual factors explained 50.44% of the total variance in performance of third party logistics as shown in Table 7.

Table 7: Factor analysis for third party logistics performance

	Efficiency	**Effectiveness**
We use on line operation system to reduce costs and maximize profits	.904	
The complaints on the products and services delivered have reduced	.777	
Our response to customer orders is quicker	.562	
The resources have been optimally utilized	.824	
Value creation for stakeholders has been promoted	.776	
The Firm`s competitiveness is enhanced	.808	
Innovation and profitability has been realized	.763	
We promptly invoice and receive cash by electronic transfer system which eases transaction		.836
We often investigate and correct irregularities in operating activities		.808
We deliver cargo to customers on time		.904
We outsources directly in foreign markets		.904
We provide reliable delivery		.904
We monitor service performance satisfactorily		.904
Our products and services are of consistent quality		.807
We often carry out consistent staff performance review		.646
Eigen Value	**3.21**	**3.19**
Variance %	**28.33**	**22.11**
Cumulative %	**28.33**	**50.44**

Findings on the Relationships among the study variables

The results in the Table 8 indicate the relationships between the study variables using the Pearson correlation coefficient (r).

Table 8: Zero Order Correlations

	1	**2**	**3**	**4**
IT Capability (1)	1.00			
IT Adoption (2)	0.594**	1.00		
Logistics Service Quality (3)	0.375**	0.432**	1.00	
Performance of 3PL (4)	0.387**	0.524**	0.406**	1.00
***. Correlation is significant at the 0.01 level (2-tailed).*				

The results in Table 8 reveal that there exists a significant positive relationship between IT capability and logistics service quality (r =0.375**p<.01), supporting *H1*. The results suggest

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that all the four components of IT Capability (i.e., IT Architecture, IT Relationship Resource, IT Infrastructure and IT Human Resource) are positively and significantly related to the logistics service quality of third party providers. These results imply that if there is IT Capability (i.e., IT architecture, IT relationship resource, IT Infrastructure and IT Human Resource) in clearing and forwarding firms , it is likely to influence and lead to improved logistics service quality of the third-party logistics providers.

The results in Table 8 further indicate that there exists a significant positive relationship between IT adoption and logistics service quality ($r=0.432^{**}p<.01$), supporting *H2*. The results suggest that all the two components of IT adoption (perceived ease of use and perceived usefulness) are positively and significantly related to the logistics service quality of third party providers. The results imply that if there is IT adoption (perceived ease of use and perceived usefulness) in clearing and forwarding firms, it is likely to influence and lead to improved logistics service quality of the third-party logistics providers.

The results in Table 8 reveal that there exists a significant positive relationship between logistics service quality and the performance of the third party logistic providers ($r=0.406^{**}p<.01$), supporting *H3*. The results suggest that all the four components of logistics service quality (i.e., tangible, reliability, empathy and responsiveness, assurance) are positively and significantly related to the performance of third party logistics. These results imply that if there is logistics service quality (i.e., tangible, reliability, empathy and responsiveness, assurance) in clearing and forwarding firms , it is likely to influence and lead to improved performance of the third-party logistics providers.

The results in Table 8 indicate that there exists a significant positive relationship between IT capability and the performance of third party logistic providers($r=0.387^{**}p<.01$), providing support for *H4*. The results suggest that all the four components of IT Capability (i.e., IT Architecture, IT Relationship Resource, IT Infrastructure and IT Human Resource) are positively and significantly related to the performance of third party logistics providers. These results imply that if there is IT Capability (i.e., IT architecture, IT relationship resource, IT Infrastructure and IT Human Resource) in clearing and forwarding firms, it is likely to influence and lead to improved performance of third party logistics providers.

The results in Table 8 reveal that there exists a significant positive relationship between IT adoption and the performance of the third party logistic provider ($r=0.524^{**}p<.01$), providing support for *H5*. The results suggest that all the two components of IT adoption (perceived ease of use and perceived usefulness) are positively and significantly related to the performance of third party logistics providers. The results imply that if there is IT adoption (perceived ease of use and perceived usefulness) in clearing and forwarding firms, it is likely to influence and lead to improved performance of third party logistics providers.

Regression Analysis

The result in the Table 9 show the regression model that was presented to examine the extent to which IT capability, IT adoption, logistics service quality affect the performance of third party logistic providers.

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Table 9: Regression Model

Model	*Unstandardized Coefficients*		*Standardized Coefficients*	t	Sig.
	B	Std. Error	Beta		
(Constant)	8.569	2.807		3.05	.003
IT Capability	0.029	0.040	0.09	0.73	.471
IT Adoption	0.221	0.071	0.38	3.10	.003
Logistics Service Quality	0.203	0.072	0.21	2.10	.042
Dependent Variable: Performance of Third Party Logistics					
R	0.562				
R Square	0.401				
Adjusted R Square	0.388				
F-statistic	11.667				
Sig.	.000				

Source: primary Data

Results in the table 9 reveal that IT capability, IT adoption and logistics service quality can predict up to 28.8% of the total variance in the performance of third party providers (Adjusted R Square =.388). This means that the regression model can only explain 38.8% of the changes in the dependent variable while the remaining percentage can be attributed to other factors other than IT capability, IT adoption and logistics service quality. This regression model was significant (sig. <.05) with its results worth using it as a basis to make decisions related to performance of third party logistics providers.

Among the independent variables, IT adoption ($\beta=0.38,\ p<.003$) was the most significant predictor of the performance of third party logistics providers then followed by logistics service quality ($\beta=0.21,\ p<.042$). Surprisingly, IT capability was not found to be a significant predictor of performance of third party providers. This implies that in order for the performance of third party logistics providers to improve, there is a need to increase IT adoption and logistics service quality of the clearing and forwarding firms.

DISCUSSION

The study investigates the relationships between IT capability, IT adoption, logistics service quality and the performance of third party logistics. The results show that there exists a significant positive relationship between IT capability and logistics service quality. IT capability influences better service to customers. Customers are able to get good services in time limit expected. It enhances the concept of Just In Time (JIT). This helps firms to deliver services to customers in the service expected. Services will be available to customers at any time they need. Firms with IT capability provide wide scope of services than those that lack IT capability. Firms create competitive advantages over others due to efficient and reliable services provided to customer. As the scope of work increases sales increase and the turnover is high. In the long run the firm's reliability increase and responsiveness is realized. The results are in line with Bowersox et al. (2002) who argued that IT capability can contribute to a firm's competitive advantage by providing cost leadership and product differentiation. Service quality can potentially improve by building IT capability. IT capability significantly affects important

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dimensions of the logistics service quality of these firms; namely reliability, responsiveness, assurance, empathy and tangibility of services.

The results show that there exists a significant positive relationship between IT adoption and logistics service quality. When firms adopt IT the services provided to their clients are faster. The system enables them to network with each other and provide a wide range of activities. This improves their time processing by shortening the documentation time. These findings are consistent with Kruger (2000) who indicated that technology development is the driving force on the clearing and forwarding firms to invest on novel technology. The result also supports Thomas and Sparkkes (2000) that IT adoption is a key component in the strategic development to improve reliability, responsiveness, assurance, empathy and tangibility of services.

The result indicates that there exists a significant positive relationship between logistics service quality and the performance of the third party logistic providers. Logistic service quality improves performance by rendering services to customers in the most efficient manner and meeting customer demands within the expected time. Customers are satisfied with the activities firms render to them and no delays in service delivery are encountered. There is short led time and reliable deliveries to customers. This finding is consistent with Millen et al. (1999) who found that logistics service quality significantly improved customer satisfaction. Similarly, Vazquez and Casielles et al. (2002) confirms that logistics service quality in supply physical distribution activities has the greatest influence on customer satisfaction. The result also mirrors Lai et al. (2008) that efficiency, effectiveness, and flexibility are the components which if achieved, automatically translate into good performance of a firm.

The findings show that there exists a significant positive relationship between IT capability and the performance of third party logistic providers. This means that for clearing and forwarding firms to do better they require having capability in the IT. Firms which possess IT capability perform well and are more reliable. The services provided are efficient and the response to customer's inquiry and order processing is quicker. The finding is consistent with Zaryab (2012) who indicated that IT increases operational competitiveness, flexibility and productivity of third party logistics. Constently, Piplani, Pokhararel, and Tan (2004) maintain that IT automates the basic operational process of a logistics service provider thus improving of the efficiency of the firm. According to Zaryab (2012), using advanced IT in the supply chain enables clearing firms to timely and effectively responds to customer's needs and requirements thus meeting customer expectations. It also reduces the lead time of orders and improves service level of enterprises.

The findings show that there exists a significant positive relationship between IT adoption and the performance of the third party logistic provider. It implies that firms that undergo IT adoption have provided stable and reliable services to their customer. They can also access large data and process information to customers at a less time. The finding support Garrido & Azevedo et al. (2007) that firms frequently integrate internet technology to redesign process in ways that strengthen their competitive advantage. This implies that IT adoption forces firms to find new ways to expand the markets in which they compete, to attract and retain customers by customizing products and services, and to restructure their business strategy to obtain competitive advantage. Thus a firm's ability to adapt to changing environment improves greatly with adoption of IT. This is also in consensus with Capgemini (2007) who indicated that as a result of IT adoption, logistics performance is likely to improve substantially and will benefit the logistics performance of the entire supply chain. Similarly Norek and Langley (2007) indicated that increased turnover in firms may be partially explained on the basis of

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their technology advancement. Equally, Wang et al. (2008) indicates that links between third party logistics financial performance to IT advantages and IT involvement.

CONCLUSION AND RECOMMENDATIONS

The study focused on the relationships between IT capability, IT adoption, logistics service quality and performance of third party logistics providers. The results indicate significant positive relationships between these variables. Research findings also indicate that IT adoption and logistic service quality influence the performance of the third party logistic providers because according to the findings they are significant predictors. However, IT capability was found not to be a significant predictor of performance of third party logistics providers. The research concluded that IT adoption was a better significant predictor of the performance of third party logistics providers than logistics service quality as used in the conceptual frame work. Therefore clearing and forwarding firms need IT adoption and logistics service quality in order to improve on the performances of their clearing and forwarding operations especially in the areas of documentation, cargo tracking, warehousing, and shipment operations.

The researchers recommend that Clearing and forwarding firm should adopt IT usage in their operations so as to speed up the process of documentation as compared to the traditional documentation procedures applied by most firms. This will reduce the time taken to process documents with Customs during clearing of cargo meant for transit and for home use. IT adoption especially ASYCUDA World would enable them to network with many customs stations and reduce delay in the Entry processing.

Clearing and forwarding firms should greatly provide efficient and reliable logistics services quality to their customers, by avoiding delays in documentation, cargo delivery and short led time. This will increase their competitive advantage in the field of clearing and forwarding and hence providing customer satisfaction.

In order to do well in the industry of freight forwarding, firms needs to build IT capability, by developing IT Architecture, IT Infrastructure, IT Human Resource and IT Relationship ship. When this prevails in the industry, it becomes easier to adapt to world standards used in the world trade organization and world customs organization procedures. Firms will outsource more products and services in the world market in a quicker and easier way. This improves performance of the firms and hence profitability.

Limitation of the study

The researcher had hard time with some respondents who feared to fill the questionnaire thinking that researcher could be a spy from URA more especially those have not complied with the URA set standards. The researcher solved this by explaining the intentions being highly academic in the introduction letter to attain the confidence of the respondent.

Another hard situation encountered during the data collection was that of some respondents who had fear that information released would be given to their competitors and they lose business but this was solved by assuring them that the information is going to be confidential and only for academic purposes.

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A self-administered questionnaire with close ended questions was used for data collection and this was likely to reduce the amount of data collected.

The study adopted a cross sectional research design which generalized the data of the sample at a particular time hence limited the findings and conclusions of the study.

Only clearing and forwarding firms which were located in central Kampala were sampled and studied hence the results of the study might be limited in being generalized. The sample size remains small.

The data collection instrument that was used by this study was a standard questionnaire which limits the information beyond the questions contained within the survey instrument.

Other statistical weaknesses especially issues of endogenity and multicollinearity due to use of regression analysis remain a potential threat to the results. Similarly, common methods bias remains an eminent threat since data was collected from the same source.

Areas for future research

The researcher recommends future scholars to extend the study to other third party logistics providers such as insurance companies, banks, and telecommunication companies.

IT capability was not found to be a significant predictor of performance of third party logistics provider despite the fact that literature appears to strongly suggest that IT capability could be a significant predictor. Future studies should examine further the impact of IT capability on performance of third party logistics providers.

This study used a cross sectional research design approach, the behaviors of the variables over time were therefore not analyzed and this restricts the applicability of the findings. Future studies should conduct longitudinal studies to cross validate the findings.

Future research should employ a larger sample involving different types of stakeholders like the regulators, remote districts, beneficiaries, and more tax payers. Data should be obtained from various sources to minimize common methods bias.

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