

Information Technology, Organizational Structure, Stakeholder Involvement and Supplier Order Fulfilment in Public Procurement: A Case of Selected Suppliers in Kampala – Uganda

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Abstract

The study examined the influence of information technology, organizational structure, and stakeholder involvement on supplier order fulfilment in public procurement. The study motivation was derived on the continued failure by most suppliers to deliver accurate, complete, and timely orders to Procuring and Disposing Entities (PDEs) which has resulted in the loss of business to some of them. A quantitative and cross-sectional research design was used in the study with a sample size of 338 suppliers. Data were analysed using SPSS version 23 with a focus on descriptive statistics, correlation, and regression analysis. It was revealed that there is a positive and significant influence of information technology, organizational structure, and stakeholder involvement on supplier order fulfilment in public procurement. Through regression analysis, it was confirmed that information technology, organizational structure and stakeholder involvement are all significant predictors accounting for 24.8% of the variance in supplier order fulfilment. These findings are supported by the complexity theory in which self-organisation, networking, responsiveness, and adaptation are considered crucial in a dynamic business environment. It was concluded that all the predictor variables of the study are pre-requisites to supplier order fulfilment. Therefore, it is recommended that suppliers need to embrace and integrate information technology into business operations, adopt a centralized structure where decisions are made at the top level with formal procedures of operation and standardization of operations. There is also a need to consult customers before and during contract implementation as well as engage them in decision-making processes and different operational activities. This will help firms in understanding the business environment well.

Keywords: Information Technology, Organizational Structure, Stakeholder Involvement and Supplier Order Fulfilment.

Introduction

Organizations operate in a dynamic environment that requires them to deal with external and internal disturbances to their operations. Besides, organisations operate in a supply-chain context and are being exposed to various disruptions due to the increased complexity of the business environment (Chowdhury & Quaddus, 2017). Some of these disturbances include; delays in demand fulfilment, failure to deliver, incomplete delivery of orders and sometimes wrong orders (Amer, Luong, Lee, & Ashraf, 2008; Zaied, Mansour, & Mostafa, 2016). Other noticeable disruptions include; loss of critical suppliers, economic depressions, quality glitches, equipment

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failures, miscommunications and human errors (Chowdhury & Quaddus, 2017; Yu, Jacobs, Chavez & Yang, 2019). Because of such disruptions, order fulfilment is increasingly receiving attention from researchers and practitioners due to its impact on the survival of organisations (Bhargava, Levalle, & Nof, 2016). This is coupled with the increasing demands from customers as customers nowadays are too demanding and time sensitive. Researchers and practitioners are increasingly looking for ways customer orders can be met amidst the complex business environment. It has also been stated that successful management of the order fulfilment process can decrease the delivery time and provide customer satisfaction (Aydın & Kahraman, 2019).

Order fulfilment refers to designing a network and a process that enables a firm to meet customer requests while minimizing the total delivered cost (Croxtton, 2003). Order fulfilment means delivering orders which are complete, accurate, on time and in perfect condition, a move that has remained a nightmare to most suppliers (PPDA Authority, 2018). This is because the order fulfilment process is composed of several interdependent activities (Lin & Shaw, 1998). These activities include sourcing for raw materials, receiving, storage, processing, and shipping (Schwarz, 2021). Managing the order fulfilment process may require robust information technology, stakeholder involvement and an appropriate organisation structure. Though it is said that information technology plays a key role in purchasing practices, it is not yet clear how information technology relates to the supplier order fulfilment process (Hemsworth, Sánchez-Rodríguez, & Bidgood, 2005). Information technology is a source of competitive advantage of the organization only in a situation in which it is actually used by the employees of the organization to integrate systems, network and create databases (Aldalayeen, Alkhatatneh, & AL-Sukkar, 2013). But this is more possible with the help of a good organizational structure which refers to the formal system of authority, relationships and tasks that control and coordinate employee actions and behaviour to achieve goals in organizations (Jones, 2013). It describes the formal arrangement of jobs and tasks in organizations (Robbins & DeCenzo, 2008), the allocation of authority and responsibility and how rules and regulation are executed by a firm's employees. It should also be noted that how a firm engages with its stakeholders such as investors, employees, suppliers, distributors, customers, and partners is a valuable resource that can help it compete in the market (Hillebrand, Driessen, & Koll, 2015; Wang & Sengupta, 2016). Therefore, it appears that the level of information technology, stakeholder involvement and organisation structure could also play a role in supplier order fulfilment process.

The presence and interaction between the variables coupled with the nature of the business environment make the Complexity Theory by Mitleton-Kelly (2003) to be considered a suitable theory for this study. According to the theory, all organizations are complex social systems and understanding them as such, provide executives with a powerful tool to create the conditions that will help organizations to co-evolve within a dynamic business environment (Alamoudi & Kumar, 2017; Mitleton-Kelly, 2003). The theory gives a framework for understanding the world. The theory guides suppliers in identifying the possibilities and understanding the challenges associated with order fulfilment. Knowing the risks allows the supplier to develop new ideas and solutions for future problems. Business success is not a result of complex rules; but it is a result of “complex behaviour within a business environment” (Alamoudi & Kumar, 2017) to gain a competitive advantage and to survive in this dynamic business environment requires a supplier to develop capabilities that enable them to be more responsive to customers' needs (Framinan, 2009). This would mean suppliers designing supply networks, monitoring the order status and reviewing the

execution of the order fulfilment process periodically to ensure that it is as effective and efficient as possible (Cannella, Dominguez, & Framinan, 2016). This requires organisations to utilise the available technologies which will help them increase their engagement with stakeholders.

The study focuses on Uganda where there has been continued failure by suppliers to fulfil orders as evidenced by incomplete or late deliveries, and wrong orders. For instance, two (2) contracts worth UGX 1,282,943,087 with the National Agricultural Advisory Services (NAADS) were delayed, and partial deliveries were made despite the expiry of the contracts. These were: supply of groundnut seed (35,250kgs) by Victoria Seeds Ltd worth UGX 159,770,760 where only 14,350kgs of groundnut seeds were delivered to five out of the eleven beneficiary districts and supply of beans worth UGX 1,123,172,327 where only 60% of beans were delivered. In addition, even those that were delivered did not conform to the specification in terms of quality (PPDA Audit Reports, 2018; 2016). Similarly, in the procurement for design typesetting, printing and supply of Uganda Road Fund (URF), whereas the contract was signed on 17th December 2015 with expected delivery on 12th February 2016, delivery was made three months later on 16th May 2016, affecting service delivery (PPDA Authority, 2018). The PPPA Audit report further states that there were poor contract management leading to delays in 127 procurements worth UGX 18,222,236,134. Such glitches have consequently affected the rating of suppliers by Procuring and Disposing Entities (PDEs) and at times suspension by the PPDA Authority. Additionally, failure to fulfil orders has increased customers' (in this case PDEs) order anxiety and decreased order frequency and size resulting in poor service delivery to the beneficiaries (PPDA Authority, 2018). The inability by suppliers to fulfil customer orders may be attributed to issues concerning information technology, organizational structure and stakeholder involvement within the business environment which require immediate intervention.

In addition to the above-mentioned challenges associated with supplier-order fulfilment, the rationale for this study is based on the identified knowledge gap. Many of the studies have focused on collaboration, trust, agility, risk, stakeholder management (Heydari, Lai, & Zhou, 2020), however, none of these has focused on how information technology, organization structure and stakeholder involvement affect supplier order fulfilment in public procurement. Therefore, the area of how the complex business environment in terms of information technology, organisation structure and stakeholder involvement affect supplier order fulfilment in public procurement is not well researched in the Ugandan context. This study contributes to the literature by showing how information technology, organizational structure and stakeholder involvement affect supplier order fulfilment in public procurement from a developing country's perspective. The study intends to come up with strategies that can be used by firms to manage the complex business environment to enable them to meet customer orders. Specifically, the study guides firms on how they can best utilise the technology, organisation structure and stakeholder involvement to improve on their order fulfilment process.

Literature Review

Theoretical Review

Since suppliers operate in a complex business environment, the study used Complexity Theory. Complexity Theory deals with organizational systems' change and the complexities which arise when different parts of the organizational system interact (Teisman & Klijn, 2008). Complexity Theory focuses on the emergence of order in dynamic and non-linear systems that operate at the

edge of chaos (McMillan, 2008). The Theory assumes that non-linear changes, of small events, can lead to large scale changes in systems and that organizations evolve in a dynamic, path-dependent manner over time because of complex interactions. To manage these uncertainties requires order-generating rules, which facilitate transformation and self-organization to remain at the edge of chaos amidst environmental changes (Burnes, 2004). This requires that parties in a network be responsive, flexible, adaptive, and proactive in dealing with the inputs of other parties that affect it (McMillan, 2008). One important part of Complexity Theory is its assumption that principles are underlying all “emergent properties,” that emerge from the interactions of many different actors (Mitleton-Kelly, 2003). The theory attempts to discover how the many disparate elements of a system work with each other to shape the system and its outcomes, as well as how each component changes over time (Mitleton-Kelly, 2003). An order fulfilment process can therefore be viewed as an open system, with interacting components exchanging feedback with its external environment. This also requires co-evolution where implementing partners must learn from their past experiences. Therefore, coordination through intensive communication (feedback loops) between the different parties involved in the order fulfilment process is paramount. Through constant communication and monitoring of parties involved in the order fulfilment process, the suppliers can identify possible disruptions to the order fulfilment process and devise means of minimising them. This requires the use of technology, proper organisation structure and stakeholder involvement. From the theory, it is observed that the organisation must reorganise itself by clearly understanding the environment in which it is operating as well as taking advantage of the opportunities in the environment. Taking advantage of the information technology, involving key stakeholders, and reorganising internally through a proper organisation structure may be key in order fulfilment.

Public Procurement

Globally, the government is a significant player in the marketplace where the procurement of goods, services and works are traded. EL-Gayed (2013) states that the public sector represents about 40-50% of many of the world’s economies in terms of spending on public services. Governments have to meet the needs of their citizens by procuring supplies, works and services from the private sector (Ambe, 2016). Public procurement is continuing to evolve both conceptually and organizationally. According to Walker and Brammer (2009), public procurement is concerned with how public sector organisations spend taxpayers’ money on goods and services. Public procurement is the acquisition of supplies, services and works by public entities using public funds. Walker and Brammer, (2009) posit that public procurement differs from private procurement in that, while private procurement is concerned with profitability, public procurement is concerned with service delivery. Of recent, public procurement professionals have faced a constantly changing environment typified by rapidly emerging technologies, increasing product choice and environment concerns (Thai, 2009). This is affirmed by Eyaa and Oluka (2011) that public procurement operates in an environment of increasingly intense scrutiny and accelerated changes driven by technology, programme reviews, and political expectations. Public sector procurement faces competing priorities, such as cost-efficiency, legal conformity, the advancement of environmental protection and the promotion of innovation (Patrucco et al., 2017). The government, the general public and private suppliers thus all have a direct interest in public procurement (Ambe, 2016). It is observed that recently there has been an increased demand on public procurement to improve its performance. This is in line with the fact that public procurement accounts for a large portion of public funds. Public procurement should be accountable,

transparent, well managed to ensure quality service delivery and protection of public interests. It should be noted that all these heavily depend on the performance of suppliers.

Information Technology and Supplier Order Fulfilment

Today, many companies are not considered independent entities, but as individual parts of multi-company and multi-echelon networks delivering goods and services to the final customer (Lambert & Cooper, 2000). Systems must be designed to enhance open and rapid communication and sharing of information across the supply chain and within the organization (Moore, 2008). The utilization of information technology has been associated with significant supply chain efficiency improvements (White & Pearson, 2001). Information technology is a prerequisite for the effective control of today's complex business environment. It is transforming businesses by allowing managers to capture and track complex data more effectively.

In today's business world, information technology plays a crucial role in the success of an organisation irrespective of its scale (Rehman, Razaq, Farooq, Zohaib, & Nazri, 2020). Tachizawa and Gimenez (2010) affirm that the adoption of information technology can help to integrate organisational processes. It is also argued that the use of information technology within the organization and in collaboration with business partners is an important factor in improving firm performance (Fuchs, Beck, Lienland, & Kellner, 2018). This is in line with the increasing need to build a closer relationship with the clients. Information technology reorganizes the communication channels within the organization, making it easier for suppliers to communicate directly with their clients. This can be through effective systems integration between the supplier and their customers (Aldalayeen et al., 2013). Information technology further plays a role in shortening the time to meet customer orders (Aldalayeen et al., 2013) and facilitates communication which improves the firm responsiveness (Pereira & Da Silva, 2015). Orders and various products related to that order can now easily be traced. It is also possible to exchange information among entities within the value chain (Moore, 2008). The use of IT also can eliminate redundant data entry, provide real-time status information.

IT capabilities have a great impact on internal process excellence, which in turn enhances supplier performance. Frequent and adequate information sharing contributes significantly to supplier performance by increasing on information accuracy and timeliness (Fuchs et al., 2018). Information technology has become an important enabler of business strategies in any supply chain in such areas of competitive differentiation, quality improvements, process automation and improvement leading to accurate and complete order fulfilment (Moore, 2008). IT enables a company to provide finished goods just-in-time, sourcing the optimum materials for the order, and the identification of the optimum means of shipping it to the customer (McDonnell, Sweeney, & Kenny, 2004). Information systems such as online ordering, electronic data interchange (EDI), information sharing play an important role in purchasing practices (Hemsworth et al., 2005). In their study, Ambekar, Deshmukh, and Hudnurkar (2021) revealed that the performance of a firm is indirectly influenced by information technology. They add that the use of information technology affects supplier relationships and purchasing practices. In addition, it is argued that the use of IT components helps the firms to exchange knowledge and communicate with other channel partners, which in turn enhances the firms' knowledge (Malhotra, Gosain, & Sawy, 2005). Information technology can be employed to enhance the conversations and exchange of knowledge between organizational members. Information technology can be also considered as a facilitator

of the knowledge creation process by providing the essential infrastructures to store and retrieve organizational knowledge. From the literature, we note that information technology plays a key role in improving the competitiveness of organisations.

The literature above shows that information technology plays a significant role in ensuring the efficient and effective delivery of goods to customers. Information technology seems to have a significant impact on the order fulfilment process as it makes it easy for the firm to network with the supply chain partners, collect data on customers as well as keep track of all customer orders. However, what remains unclear is whether this can still happen in the public procurement context. Therefore, it is not clear how information technology relates to supplier order fulfilment, especially in public procurement. From this view, the study formulates the following hypothesis:

H1: There is a positive influence of information technology on supplier order fulfilment in public procurement

Organizational Structure and Supplier Order Fulfilment

Organizational structure can be defined as a mechanism that links and coordinates individuals within the framework of their roles, authority, and power. It represents a useful tool that directs individuals' behaviours through shared values, norms, and goals (Chughtai & Zafar, 2006; O'Neil, Beauvais, & Scholl, 2001). Organisational structure describes the internal characteristics of an organization which have now received a lot of attention because of its importance in organisation competitiveness (Auh & Menguc, 2007). Amongst the internal characteristics of an organisation is organizational commitment. Organizational commitment enhances the success of an organization by making employees dedicated to the achievement of its goals (Grawe, Daugherty, & McElroy, 2012). The success of any organization can be predicted by its success in raising and maintaining employees' commitment. High levels of commitment contribute to positive attitudes and behaviours in organizations (Chughtai & Zafar, 2006; Srivastava, 2013) which may result in order fulfilment.

Some researchers have sought to determine which structure brings the most advantages for organizations and they have suggested that organizational structures should be responsive to a variety of individual needs in businesses (Conner & Douglas, 2005). Organizations need to design their structures by the organizational strategies, internal and external working environment conditions. According to Gresov & Drazin (2007), the most effective structure is a structure that adjusts itself with the requirements of the environment which may be linked to the needs of customers. This is considered appropriate since organisations operate in a dynamic environment. There is a need for flexibility in the organisation structure if the organisation is to be responsive to customer needs. Organizational structure is used by various organisations as a control mechanism to effect employee work outcomes. It is also used to ensure that the required tasks are performed effectively and efficiently as well as to assist the attainment of organizational goals and objectives (Katsikea, Theodosiou, Perdikis, & Kehagias, 2011).

Most extant studies on organizational structure focus on centralization, formalization, and standardization as its measures. Centralization refers to the concentration of decision-making authority at the upper levels of an organization (Jones, 2013). In a centralized organization, decision making is kept at the top level, whilst in a decentralized organization; decisions are

delegated to lower levels (Al-Qatawneh, 2014). Formalization looks at the extent to which job tasks are defined by formal regulations and procedures. These rules and procedures are written to standardize operations in organizations. Standardization is the extent to which employees work according to standard procedures and rules in an organization (Hsieh & Hsieh, 2001). It ensures employees complete their duties and tasks in the required manner, and ensures that an employee's actions and behaviours are routine and predictable (Jones, 2013) and that similar work activities are performed uniformly at all locations. Formalization and standardization are control mechanisms that seek to ensure that employee behaviours contribute to the achievement of goals in organizations and one such goal is efficient and effective order fulfilment. When formalization and standardization are extensive in an organization; employees are accountable for their actions and cannot easily break rules (Jones, 2013). In general, the design of an organizational structure is a difficult yet extremely important task. A structure that has been very effective over a long period may not perform properly when the environment changes. Thus, an order-fulfilment process managed successfully in a functional organization serving a stable market may suddenly fail if competition increases, pushing lead time down while increasing the pressure for a larger variety of end products (Shtub & Karni, 2010).

The order-fulfilment process from customer needs to manufacturing, through purchasing and subcontracting, is subject to uncertainty. Customers change or cancel orders, forecasts of demand are subject to errors and availability of manufacturing resources is subject to machine breakdown and employee absenteeism, while suppliers' lead times, quantities and quality are all subject to random variation (Shtub & Karni, 2010). A well-integrated order-fulfilment process is required to cope with the dynamic, uncertain environment. The organization which supports such a process should not be divided by functional lines and should focus on one goal and coordinate all of its efforts to achieve this goal a competitive order-fulfilment process that outperforms the competition in cost, quality, flexibility and time (Shtub & Karni, 2010). Robbins & DeCenzo (2008) argue that the organizational structure performs a significant role in the achievement of organizations set objectives and accomplishment of its strategic goals and direction. From the literature, it can be observed that organisation structure plays a key role in the competitiveness of an organisation. However, it's not clear how organisation structure relates to supplier order fulfilment in public procurement. From this review, the study, formulates the following hypothesis:

H2: There is a positive influence of organisational structure on supplier order fulfilment in public procurement.

Stakeholder Involvement and Supplier Order Fulfilment

In any business environment, efforts must be dedicated to ensuring the complete satisfaction of not only the customers but also the satisfaction of the suppliers whose products or services are incorporated into the customer order and whose performance impacts customer satisfaction (Gordon, 2009). Where the situation is complex, it can be a good idea to systematically analyse the stakeholders involved. They can include development partners, clients, end-users, civil society, senior management, finance, technical experts (Marius, 2017). It is important to identify the interests and relative importance of each stakeholder. Sometimes the interests of various stakeholders can conflict with each other. In practice, managers usually need to develop a collaborative but focused relationship with key stakeholders. Successful involvement of

stakeholders is therefore paramount and involves actively giving and getting their support and working together to devise, plan and implement sustainable business solutions (Marius, 2017). According to Herscovitch and Meyer (2002) stakeholder involvement leads to increased affective commitment where stakeholders adopt the organization's goals as their own and desire to remain with the organization to help it achieve its goals. This leads to increased performance in form of order delivery to customers as Carmeli and Freund (2002) note that stakeholders who have high levels of role involvement might reciprocate in the form of greater affective commitment to the organization leading to increased performance and thus sustainability. Stakeholders need to be involved when contract objectives are being set when requirements are being developed, when risks and opportunities are being assessed and when decisions are being made. The point of identifying and getting to know stakeholders early means that the organisation can involve the right people while implementing the contract and throughout the contract for them to be committed to contract objectives (Namiyango et al., 2016) and one such objective is customer satisfaction.

Stakeholder involvement may involve role participation which tests the stakeholders' willingness to carry out organisational activities. It also involves consultation which involves testing the stakeholder views about the way they were involved by being consulted before the initiation phase. The other component is decision making which looks at the degree to which stakeholders participate in making decisions that impact them (Namiyango et al., 2016). Stakeholders have the power to influence the contract outcome either positively or negatively (Chinyio & Olomolaiye, 2009). Management in an organization must harmonize the requirements of the business to those of the stakeholders to ensure the long-term success of the organization. When it comes to important corporate decisions for example about quality and delivery, it is necessary to know about the expectations of different stakeholders and to determine to what extent they could and would exert an influence (Yilmaz & Gunel, 2009). According to Otieno (2016), participation in decision-making by those that are affected by it results in them having a higher degree of ownership and commitment to the achievement of its objective. Further, the quality of output will also increase as more people get involved in the joint process of common interest. A sense of ownership that culminates in a better outcome of a strategy may therefore be built in the organization as more stakeholders are included in decision making (Otieno, 2016). It, therefore, observed that stakeholder involvement enables the organisation to understand the needs of its stakeholders better. It also brings about stakeholder commitment. However, it's not clear how stakeholder involvement relates to supplier order fulfilment in public procurement. From this review, the study formulates the following hypothesis:

H3: There is a positive influence of stakeholder involvement on supplier order fulfilment in public procurement.

The above literature indicates that there is a relationship between information technology, organizational structure, stakeholder involvement and supplier order fulfilment. These relationships are summarized in the conceptual framework in Figure 1.

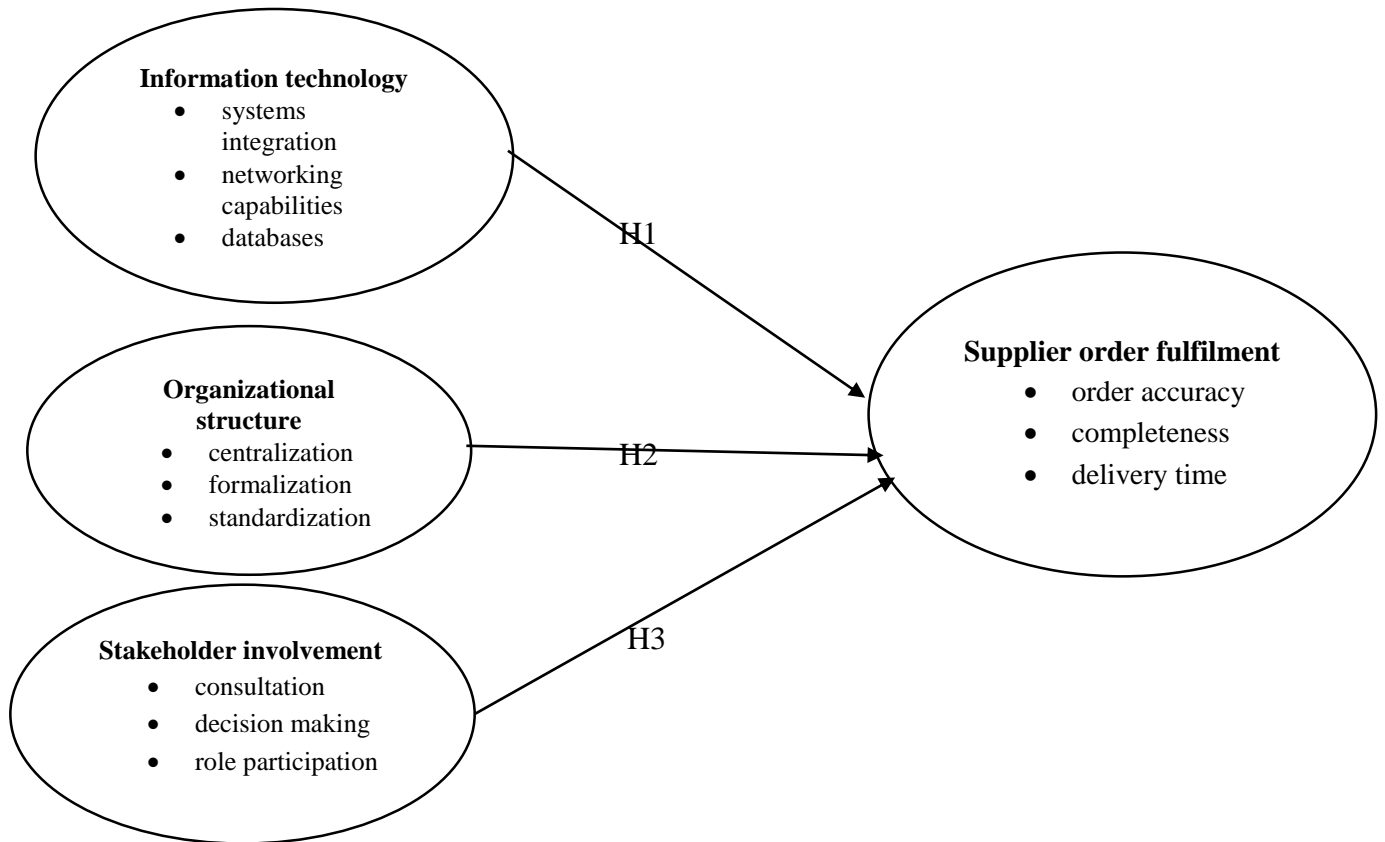


Figure 1: Conceptual Framework

Source: Adapted from literature (Al-Qatawneh, 2014; Aldalayeen et al., 2013; Hoffman, 2002; Jones, 2013).

Methodology

A cross-sectional research design was adopted in the study simply because the study was to be carried out in a specific period (Saunders, Lewis, & Thornhill, 2016). A quantitative approach was used based on descriptive and inferential statistics. The descriptive analysis explained the demographics in the study. Correlation showed the relationships between the study variables while regression, on the other hand, showed the predictive power of the independent variables on the dependent variable. Since the study focused on public procurement, suppliers registered with the PPDA Authority were considered. The total population of suppliers registered with the PPDA is 3,439 of which 2,744 are in Kampala (PPDA Authority, 2021). Those located in Kampala were identified by looking at their registered addresses on the e-Government Procurement platform (EGP). This eventually formed the population of this study. Suppliers registered in Kampala were selected for this study since according to the PPDA Register of providers, most of the suppliers are allocated in Kampala. We also considered the ease of access due to time constraints. The unit of analysis was registered suppliers while the unit of inquiry was a manager or firm owner, having enough knowledge regarding information technology, organisation structure, stakeholder involvement, and order fulfilment. A sample of 338 determined by Krejcie and Morgan (1970)

was selected using a simple random sampling technique in which we were able to receive valid responses from 296 respondents making a response rate of 87.6%. Primary data was used for this study using closed-ended and self-administered questionnaires through a drop and pick method.

Measurement of Variables

Information technology; was measured using dimensions such as systems integration, networking capabilities and databases adapted from the works of Aldalayeen et al(2013). *Organizational structure*; was measured based on items such as centralization, formalization and standardization adapted from the works of Jones (2013) and Al-Qatawneh (2014). *Stakeholder involvement*; was measured based on the dimensions of consultation, decision making and role participation as earlier used in the works of Namiyingo et al (2016) and Otieno (2016). *Supplier order fulfilment*; was measured based on the items such as order accuracy, completeness and delivery time obtained from the works of Hoffman (2002).

Validity and Reliability

To ensure content validity, a questionnaire was tested before its final administration by use of professionals and experts to cross-check whether the instrument is valid. Content Validity Index (CVI) was computed and any value of 0.70 or more was considered good (Saunders et al., 2016). To ensure the reliability of the research instrument, a Cronbach Alpha test was computed to determine consistency. According to Nunnally (1978), the reliability coefficients of 0.70 or more are considered good.

Table 1: Reliability and Validity of the Instrument

Variables	Number of Items	Cronbach Alpha Coefficient	Content Validity Index
Information Technology	15	.763	.867
Organizational Structure	16	.768	.875
Stakeholder Involvement	15	.822	.933
Supplier Order Fulfilment	15	.812	.800

Source: Primary Data

Results in Table 1 prove that the research instrument is both reliable and valid as reflected by the Cronbach Alpha coefficient and the content validity index respectively since the values are all above 0.70 which are acceptable according to Nunnally (1978). This means that the research instrument even when subjected to the field on several occasions can still produce consistent and accurate results.

Data Processing and Analysis

Data were analysed using the SPSS version 23 in which descriptive statistics were produced to understand the characteristics of respondents. Pearson correlation analysis was applied to establish the relationship between the study variables. Regression analysis was used to determine the extent to which the predictor variables predict supplier order fulfilment.

Results

Respondents/Individual Characteristics

Results indicate that majority (73.6%) of respondents who participated in the study are males while only 26.4% were females. This means that supplier firms are largely managed by males than females which could be partly due to the level of flexibility that most males possess coupled with the nature of work involved in those businesses. Regarding age group, most of the respondents were above 30 years and only 8.4% were below 30 years of age. The distribution is justifiable since business requires people of sound mind with experience and financial discipline which older people possess compared to the young ones. In terms of the level of education, most respondents hold a bachelor’s degree and above represented 61.6% while 38.5% hold diplomas. This is an indication that all the respondents have the knowledge and the ability to interpret questions and give valid responses.

Firm Characteristics

Table 2 shows the attributes of supplier firms as per the study, including company age, number of contracts in a financial year, number of staff employed, time to deliver customer orders and complaints from customers regarding order accuracy, completeness, and delivery time.

Table 2: Firm Characteristics

Company Age	Count	Valid Percent
Less than 1 year	1	0.3
2-4yrs	9	3.0
5-7yrs	49	16.6
8-10yrs	83	28.0
Above 10yrs	154	52.0
Total	296	100.0
Number of contracts in a year		
Less than 2	12	4.1
3-6	81	27.4
7-10	97	32.8
11-14	39	13.2
Above 14	67	22.6
Total	296	100.0
Number of staff		
1-5	36	12.2
6-10	69	23.3
11-15	25	8.4
16-20	36	12.2
Above 20	130	43.9
Total	296	100.0
Time to deliver customer orders		
Less than a month	262	88.5
2-4 months	27	9.1
5-7 months	1	0.3
8-10 months	4	1.4
Above 10 months	2	0.7
Total	296	100.0

Source: Primary Data

Company Age: Most of the companies (96.6%) have been in operation for more than 5 years and only 3.3% have operated for less than 5 years. This means that majority of the companies have a clear understanding of the business environment thus giving reliable information regarding supplier order fulfilment.

The number of contracts secured in a year: Most of the companies can secure more than 7 contracts in a financial year (68.6%), while only 31.5% secure less than 7 contracts in a given financial year. This implies that majorities of the companies are progressing well with business and that they can meet the needs of their customers. This may also be due to the availability of many contracts in the public sector.

The number of staff employed in total: Most of the companies (64.5%) employ above 11 staff to work in different departments while 35.5% of the companies employ less than 11 staff. The distribution is justifiable given that the volume of orders placed by public buyers is large enough which requires quite a good number of people to work on.

Regarding the time to deliver customer orders. Most of the companies (88.5%) deliver orders to their customers in less than a month and only 11.5% deliver customer orders for more than a month. This means that most of the companies give their customers the required level of satisfaction in terms of a short delivery time. This may partly be due to the large number of staff that the companies employ who speed up the order process.

Relationships between study variables

Table 3 shows the correlation results between information technology, organisational structure, stakeholder involvement and supplier order fulfilment in public procurement.

Table 3: Correlation results

	Mean	SD	1	2	3	4
Information Technology (1)	3.990	.734	1.000			
Organizational Structure (2)	4.381	.652	.220**	1.000		
Stakeholder Involvement (3)	4.130	.687	.478**	.343**	1.000	
Supplier Order Fulfilment (4)	4.128	.656	.454**	.269**	.377**	1.000

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Primary Data

Regression results

To further understand the relationship and effect of the study variables regression analysis was undertaken and the results are presented in Table 4. Before, conducting the regression, we used scatter plots to check whether the relationship between supplier order fulfilment and the independent variables is linear. We also tested for multicollinearity.

Table 4: Regression Model

	Unstandardized Coefficients	Standardized Coefficients	T	Sig.
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	B	Std. Error	Beta		
(Constant)	1.646	.274		6.008	.000
Information Technology	.308	.051	.345	5.987	.000
Organizational Structure	.137	.054	.136	2.533	.012
Stakeholder Involvement	.158	.057	.165	2.758	.006
Dependent Variable: Supplier Order Fulfilment					
R	.505				
R Square	.255				
Adjusted R Square	.248				
Std. Error of the Estimate	.569				
F Statistic	33.391				
Sig.	.000				

Source: Primary Data

It was revealed that information technology, organizational structure and stakeholder involvement can predict 24.8% of the variance in supplier order fulfilment (Adjusted R Square =.248). This implies that other factors outside this study contribute 75.2%. The results further show that information technology (Beta =.345, sig. < .05), organizational structure (Beta =.136, sig. < .05) and stakeholder involvement (Beta =.165, sig. < .05) are all significant predictors of supplier order fulfilment. But information technology is the most significant predictor of supplier order fulfilment followed by stakeholder involvement while organizational structure shows a weak association as represented by their Beta coefficients and sig. values above.

Discussion of results

Influence of Information Technology on Supplier Order Fulfilment

The results in Table 3 above indicate a positive and significant relationship exists between information technology and supplier order fulfilment ($r = .454^{**}$, $p < .01$). This means that when suppliers integrate their systems of operation into a unified whole, they tend to deliver orders faster to the customers, thereby meeting deadlines. Also, when firms develop databases and network easily with their clients, they are more likely to understand their requirements well hence ensuring accuracy and completeness in-order delivery. In other words, information technology facilitates order fulfilment to the expectation of customers thereby encouraging repeat purchases. This view is supported by the regression results in Table 4 which show information technology as a significant predictor of supplier order fulfilment. The study established a positive and significant relationship between information technology and supplier order fulfilment. This implies that a company capable of integrating several operations into a single operation and network easily through the exchange of information is more likely to be swift in fulfilling customer orders. Therefore, for a supplier to meet the needs of customers in public procurement needs to develop a database of customers and their requirements, maintain up-to-date information about their customers. This will lead to more accurate, timely and complete orders. In other words, the adoption of information technology by a company results in improved order fulfilment. These findings are in line with the works of McDonnell et al (2004) who opined that IT enables a company to provide finished goods just-in-time for delivery, based on an individual unique order

received from anywhere in the world; sourcing the optimum materials for the order, and the identification of the optimum means of shipping it to the customer. Similarly, Moore (2008) asserts that IT is an important enabler of business strategies in any supply chain on such areas of competitive differentiation, quality improvements, process automation and improvement leading to accurate and complete order fulfilment. Our results further agree with those of Ambekar et al (2021) who state that though investment in technology may be seen as an internal process, its results are seen on how it impacts supply chain partners. In this case how it eases the order fulfilment process. Also given the various disturbances in the business environment with the most recent one being the COVID-19 pandemic, firms which embrace information technology will be able to excel compared to those that do not. For instance, firms have had to communicate with their customers and other supply chain partners over online platforms. They have had to track customer orders and shipments online. All these require an integrated information technology system to enable easier communication between supply chain members. Besides, by utilising information technology, the supplier can gather customer information, maintain a database of customers and their key requirements as well as monitor customer orders. The use of technology brings about innovative and efficient ways of fulfilling customer orders by making it easy to share information across the supply chain. The use of information technology enables the firm to discover and utilise its other capabilities that support the order fulfilment process. Therefore, from these findings and discussion, our hypothesis that information technology positively relates to the supplier order fulfilment process is fully supported.

Influence of Organisational Structure on Supplier Order Fulfilment

A positive and significant relationship is revealed between organizational structure and supplier order fulfilment ($r = .269^{**}$, $p < .01$). This implies that when suppliers centralize decisions relating to their business operations at the highest hierarchy level, they fairly save time, hence speeding the order delivery process. Similarly, formalization and standardization of business operations enable suppliers to understand the need or requirements of their customers, thus delivering accurate and complete orders as per their specifications. In other words, a well-developed organizational structure eases the flow and fulfilment of orders to the customers, hence meeting their needs. These findings are also supported by the regression results which shows organisation structure as a key predictor of supplier order fulfilment.

The positive and significant relationship between organizational structure and supplier order fulfilment means that companies that centralize the decision-making process tend to fairly save operational time, hence the possibility of meeting deadlines about order delivery. Similarly, companies that operate under formal structures and standard procedures are more likely to understand their customers' requirements thereby meeting their specifications in terms of order accuracy and completeness. So, an improvement in organizational structure results in an improvement in supplier order fulfilment. This finding is supported by the findings of Decenzo & Stuart-Kotze (2002) who argue that the organizational structure performs a significant role in the achievement of organization set objectives and accomplishment of its strategic goals and direction. Also, Katsikea et al (2011) established that organizational structure is used by various firms as a control mechanism to affect employee work outcomes, to ensure that the required tasks (orders) are performed effectively and efficiently, and to assist the attainment of organizational goals and objectives. Our results are in line with other studies that have stated that why many firms in Uganda have been failing to win procurement contracts is the fact that they are not well organised.

Therefore, from these findings our hypothesis that organisational structure is positively related to supplier order fulfilment in public procurement is supported.

Influence of Stakeholder Involvement on Supplier Order Fulfilment

A positive and significant relationship exists between stakeholder involvement and supplier order fulfilment ($r = .377^{**}$, $p < .01$). This is an indication that consulting stakeholders before and during the contract helps suppliers to understand their requirements, thus making accurate and complete delivery of orders. Also, firm managers who make faster and right decisions as well as understand their role in the order process tend to be swift in terms of order delivery. Therefore, involving stakeholders in business activities help to facilitate the order fulfilment process. Other than the customers, suppliers need to keep in constant communication with their employees who are also key stakeholders, government bodies that are involved in the procurement process also need to be considered in the order-fulfilment process.

The positive and significant relationship between stakeholder involvement and supplier order fulfilment implies that seeking opinions of stakeholders through consultation and allowing them to be part of the company's decision-making process helps the company to properly understand their needs thereby increasing order accuracy and completeness hence achieving customer satisfaction. Also allowing customers to participate freely in the order delivery process creates a friendly working environment which helps to shorten the order delivery time. Therefore, the more stakeholders get involved in the operational activities of a company, the more the company becomes efficient and effective in order fulfilment. These findings are in agreement with those of Carmeli and Freund (2002) who noted that stakeholders who have high levels of role involvement might reciprocate in the form of greater affective commitment to the organization leading to increased performance and thus sustainability. Further, Crawford (2004) opined that stakeholder involvement is one of the core soft skills areas that have been highlighted as being necessary for building commitment to the organization to achieve desired outcomes in this case, order fulfilment. Therefore, from these findings, our hypothesis that stakeholder involvement is positively related to supplier order fulfilment in public procurement is supported.

Conclusion and Implications

The study sought to examine the relationship between information technology and supplier order fulfilment, and we conclude that information technology is positively and significantly related to supplier order fulfilment. This implies that companies that integrate their systems of operations, network with their clients and develop a database of customers and their requirements are likely to meet the needs of their customers in terms of delivery time, accuracy, and completeness of orders. Therefore, in the current era of frequent and dynamic disturbances and constant changes in the customer order, strengthening the use of technology is becoming vital for suppliers. Therefore, suppliers in Uganda should continue to register on the PPDA website and take advantage of the e-Government programme the government has launched. This will increase their visibility as well as get information about the needs of the public entities in advance and then plan on how these can be met.

The study also sought to examine the relationship between organizational structure and supplier order fulfilment; we, therefore, conclude that organizational structure is positively and significantly related to supplier order fulfilment. This means that companies that develop a

centralized organisation structure where decisions are made at the highest hierarchy level, operate under formal procedures, and standardize their operations remain focused on delivering accurate and complete orders to customers along with shortening the order delivery time. Therefore, as a way of improving their credibility in public procurement, suppliers in Kampala need to get formally registered as well as establish a clear organizational structure. Thirdly, the study aimed at examining the relationship between stakeholder involvement and supplier order fulfilment and we conclude that stakeholder involvement is positively related to supplier order fulfilment. This is an indication that companies that consult their customers, make them part of the decision-making process, and allow them to participate in different activities often understand what they need in terms of quality, quantity and time hence ensuring accuracy and completeness in delivery. Also involving suppliers early in the procurement process of their raw materials will play a key role in meeting the requirements of public entities.

What these findings imply is that regardless of the costs associated with technology, companies need to embrace and integrate information technology into their business operations as it has proved to be a key component of order fulfilment. This can be possible through organizing training programs to equip the suppliers with the skills necessary to operate these technologies. Companies amidst challenges within the business environment should adopt a centralized structure where decisions are made at a central unit with the formal procedure of operation and standardization of operations. This is so because a good organizational structure results in an improvement in supplier order fulfilment. The supplier should always consult their customers before and during the contract, involve them in the decision-making process and allow them to participate in different operational activities related to the order process including fulfilment. This is because stakeholder involvement plays a significant role in order fulfilment as proved by the findings of this study. Further, suppliers need to understand the business environment well enough as this knowledge helps them to prepare and organize themselves towards meeting the demands and requirements of different customers rightly, hence fulfilling their orders. Finally, the government through PPDA Authority needs to develop and impose tough and strong deterrence measures on suppliers who fail to meet the contract terms and conditions as this will enable them to understand their role in a contract.

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