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Abstract

Procurement performance remains an imperative aspect of consideration in modern organizations. Public and private organizations are increasingly emphasizing procurement performance because it ensures efficiency and effectiveness of operations. However, most organizations are grappling with procurement performance due to contextual risks that deter the best outcomes from procurement operations. This study aimed to investigate the influence of information risk on the procurement performance of public universities in Kenya. The study was anchored by the resource dependence theory and the transaction cost theory. Achieving the study aim involved collecting primary data from a census of 31 public universities in Kenya using a closed-ended-questionnaire. Data collected was analyzed using Statistical Software for Social Sciences (SPSS) version 25 and presented using tables and graphs generated by the software. Reliability of the questionnaire was determined using Cronbach's alpha ($\alpha > 0.7$) while reliability was determined based on the expert views. The findings confirmed that information risk has a significant negative impact (-1.859 ; $p=0.013$) on the procurement performance of public universities in Kenya. The study recommended on the need for conducting prior risk assessment before undertaking an outsourcing project to ensure that available information is accurate and suitable to inform the process.

Keywords: *Procurement Performance, Information Risk, Public Universities, Kenya.*

1.1 Introduction

Outsourcing is rapidly becoming the mainstay of most organizations. Companies find it necessary to procure materials and service inputs from an external source as a cost-minimization and efficiency improvement strategy (Troaca & Bodislav, 2012). Iqbal and Dad (2013) argued that outsourcing entails conveying operations traditionally carried out within an organization to a third-party service provider within or outside a country. Factors such as the need for efficiency, cost reduction, strategic changes, boosting performance, and the desire for improved competitive advantage drive most organizations toward outsourcing (Clott, 2004; Lynch, 2004). In order to achieve its, organizations must exhibit satisfactory procurement performance. Kakwezi and Nyeko

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(2019) suggest that procurement performance can be measured using financial and non-financial measures. Kasanya (2013) is of the idea that there is a connection between procurement processes, effectiveness, efficiencies and the overall procurement performance. Similarly, Anane and Kwarteng (2019) propose that procurement performance results from purchasing effectiveness and efficiency. Therefore, procurement performance is about determining the efficiency and effectiveness of the procurement function in achieving its set objective and goal. Contrary to the popular expectation, outsourcing does not always enhance organizational performance due to several risks that deter its process and eventual outcomes.

Even though outsourcing does present an organization with certain benefits, it also exposes firms to certain risks. According to Kremic et al. (2006), the lack of solid outsourcing strategies has led to many organizations not enjoying the benefits of outsourcing. Instead, they find themselves exposed to various outsourcing risks. A report by Deloitte indicates that in the USA, the US Foreign Corrupt Practices Act proposes the imposition of fines or direct compensations of about \$0.5 to \$1 billion on companies that breach the outsourcing contracts and fail to comply with the prescribed regulations (Park *et al.*, 2015). The huge fines imply high cases of breached outsourcing contracts. Similarly, most of the outsourcing organizations are forced to prematurely end their contracts with the third-party security providers because they fall below the standards agreed upon under the service level agreement. A study conducted by Synovate group establishes that about 66% of outsourcing efforts conducted by Kenyan universities ended up as a total failure. Failure in this context is used to mean they either did not fulfill their intended objectives or did not last long after the agreement was made with the third-party service providers (Nyangau *et al.*, 2014).

Information risk occurs when organizations use inaccurate information to make business decisions. The primary cause of an information risk is a decision-maker lacking adequate firsthand information that they can use to make decisions, thus, necessitating relying information from others. According to Blakley *et al.* (2002), information is an important asset to any organization. For this reason, information security is not something companies are willing to compromise. Information risks arise out of the technologies applied to information. Using these technologies leads to voluntary or involuntary compromise of information (Blakley *et al.*, 2002). Therefore, organizations are adopting information risk management practices. The risk management strategies aim to preserve confidentiality, maintain the integrity of organization data and provide the assurance of availability of the relevant information to the authorized users (Al-Dhahri *et al.*, 2017). Moreover, the information that risks an organization could originate from a person whose goals are not consistent with the decision-maker's. This may mean that the information is biased in favor of the provider. Relying on inaccurate information during the procurement process exposes an organization to the risk of making wrong decisions that may cost it huge amounts of resources.

1.2 Problem Statement

Organizations engage in outsourcing arrangements with the expectations of maximizing returns on internal resources and improving the organization's flexibility (Tabor *et al.*, 2006). However, the outsourcing process is marred with several risks that undermine its performance. one of the dominant risks that affect the performance of procurement is information risk. In the presence of such risk, most firms will terminate their outsourcing relationship to cut their losses (Jawab &

Ariff, 2015). research by the Synovate group showed that about 66% of outsourcing relationships entered by Kenyan universities end prematurely or do not achieve the objectives expected. Universities end up experiencing huge financial losses due to contract terminations (Nyangau *et al.*, 2014). Another challenge is the fact that these risks are inadequately addressed. Academics have chosen to focus on the benefits and challenges involved in the outsourcing process. Minimal attention has been focused on analyzing the information risk and how they can be avoided or dealt with (Salanta *et al.*, 2011). Studies such as Nyangau *et al.* (2014) and Mucai (2010) that have attempted to analyze the outsourcing landscape in the context of universities have fallen short of analyzing how the impact of these strategies on the outsourcing process risks. This study intends to provide a new dimension by analyzing the influence of outsourcing risks on the performance of public universities in Kenya.

1.3 Aim

To investigate the influence of information risk on the procurement performance of public universities in Kenya.

1.4 Significance

The study findings will be important to the public universities, third-party service providers, and researchers and scholars. The research findings and conclusions should help the public university institutions make informed decisions on managing their outsourcing relationships successfully. The study also benefits the management of third-party service provider firms in Kenya by offering them insights on cultivating a good working relationship with outsourcing organizations to reduce outsourcing risks. This study will open up opportunities for other researchers through the identification of research gaps that can be filled through future research. It will also offer useful information that can be used for their literature review.

2.1 Literature Review

The literature review section presents a critique of theoretical and empirical literature, and illustrates the conceptual framework for the study.

2.2 Theoretical Review

The theory that underpinned the current study is the resource dependency theory. The theory examines the relationship between organizations and the resources they require to sustain their operations. Pfeffer and Salancik (1978) describe organizations as open structures dependent on contingencies present in the firm's external environment. The theory argues that external factors present in the external environment greatly influence an organization's behavior. It also assumes that a firm's dependence on the critical external environment resources influences an organization's decisions and actions depending on the dependency situation in context (Pfeffer & Salancik, 1978). Information is one of the critical resources that organizations need to make informed decisions. A resource is considered critical in an organization if the unavailability of that resource may result in endangering the ability of that organization to function. The organization's reliance on a given resource is influenced by factors such as the level of resource importance to

the firm, competition between firms for control over the resources, and levels of resource scarcity (Pfeffer & Salancik, 2003).

However, Rivas (2012) criticizes the resource dependence theory for failing to adequately address the relationship between the environment, the dependency on vital resources, and their impact on organizational behavior without the knowledge of the parties involved. Instead, it assumes about actors and their relationship to the environment. Nevertheless, the theory provides an insight regarding the need for organizations having adequate and reliable resources that they can use to improve operations. The theory is relevant to the current study because it elucidates that public universities should assess the information available to ensure its suitability to procurement decisions.

2.2 Empirical Review

Kemei *et al.* (2017) evaluated the impact of information system security threats on information resources in public institutions. The study was based on the Kenya School of Government case study. The study aimed at analyzing the impact of systems security threats on organizational information resources in Kenya School of Government. The researchers also wanted to understand the problem information system threats pose to information resources of the institution. The study utilized a descriptive survey as the research design. The study found that illegal computer systems access was the greatest information system security threat the case study institution faced. Moreover, the study establishes that public institutions in Kenya are yet to fully adopt ICT strategies and policies that would help protect their systems from the information risks they face. However, they do acknowledge that the public institutions' commitment to minimizing cyber-related crimes was on the rise. They attributed this rise to the e-government policies for public institutions to utilize Integrated Financial Management Information System (IFMIS) and e-procurement systems (Kemei *et al.* 2017).

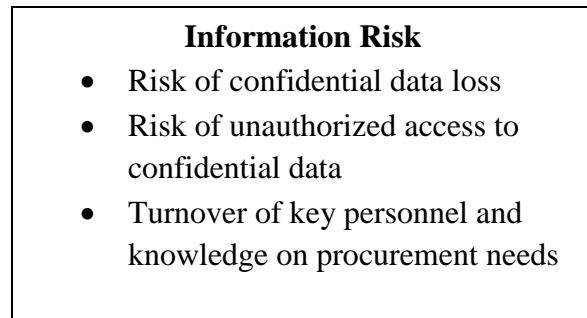
Kwaa-Aidoo and Agbeko (2018) assessed the information system security of a university in Ghana. Their study's main aim was to evaluate the Ghanaian public university information system's condition and analyze its information security state. The study adopts a descriptive research design. The study found that the public university considered confidentiality as its main information security aim, followed by integrity. The findings also indicate that the university considered students and research data as its most valuable information system assets. Therefore, they considered malware attacks and illegal access to these data as the university's main information system risk. The researchers also concluded that the university lacked solid information risk mitigation policies. Moreover, the university had not sufficiently trained its members in information security (Kwaa-Aidoo & Agbeko, 2018).

Diana *et al.* (2015) conducted a study on the issue of information confidentiality and cyber security in medical facilities in Romania. The main objective of their research was to analyze the information confidentiality issue, the cyber security risks, and the management plans to address these challenges in Romania medical institutions. The study used a qualitative research design, employing a case study approach. The researchers establish that violation of information confidentiality is a risk capable of contributing to financial losses to a medical institution, which harms their overall performance. Therefore, there is a need for these institutions to develop risk management strategies to make their information systems robust (Diana *et al.*, 2015).

2.3 Conceptual Framework

Figure 1 below is a diagrammatic representation of the conceptual framework that illustrates the hypothesized interaction between the independent and dependent variables.

Independent variable



Dependent variable

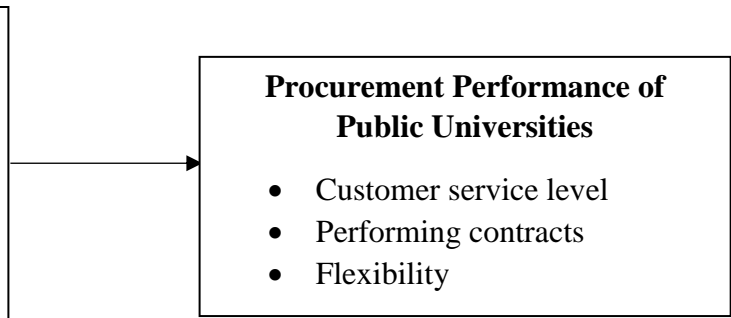


Figure 1: The conceptual framework.

3.1 Research Methodology

This section presents details of the methodology that the researcher adopted in conducting the study.

3.2 Research Design

The study used a quantitative research method, which involved collection and analysis of numeric data. A survey research design was adopted. A survey research methodology enables the researcher to collect data on varying study subjects. The researcher utilizes this data to determine the extent to which varying conditions can be achieved among the study subjects. The survey questions used by the researcher are developed with a view of solving research problems identified by the researcher and also determining whether the set research goals can be met (Sekaran & Bougie, 2010). Therefore, a major benefit of this methodology is that it is flexible, making it applicable for use in a wider variety of research contexts.

3.3 Target Population

The target population for this study entails public universities in Kenya. Currently, Kenya has 31 public chartered universities (CUE, 2017). The unit of analysis for this study were public universities in Kenya. The unit of observation for this study were the study respondents in the procurement department of the respective public universities. The census method is adopted for this study. According to Daniels (2012), the method is adopted when a researcher is dealing with a smaller study population. Currently, there are 31 public universities in Kenya. Each of the institutions has one procurement department in charge of the outsourcing functions. Therefore, the small population made it logical for the researcher to use the entire population for this study.

Moreover, most of the elements selected have sufficient knowledge or experience about the phenomenon under study.

3.4 Instrumentation

The study adopted a self-administered questionnaire. The questionnaire contains close-ended and open-ended questions. Questionnaires were preferable for this study because, if randomly administered to the study population, they had the potential to offer a comprehensive perspective of the beliefs, attitudes, values, and opinions of a larger population with minimal margins for errors (Cargan, 2007).

3.5 Validity and Reliability Assessment

The face validity of the research instrument used in this study was determined by discussing it with the supervisor. The researcher also relied on feedback from research experts in this field. Finally, the researcher also sought the expert opinion of procurement professionals, and the feedback was that the research instrument comprehensively addressed the issues to be studied. Conversely, content validity is concerned with whether the research instrument used in a study comprehensively addresses all the issues that the researcher intends to test. The validity can be established by relying on experts in the study area or people from the target population. The rating can be done using a Likert scale (Kember & Leung, 2008). Cronbach's alpha was used to test for reliability. The Cronbach alpha is the most common internal consistency reliability test in research questionnaires. Generally, the minimum acceptable alpha is 0.70, while 0.90 is regarded as the maximum preferable value (Cronbach, 1971).

3.6 Data Procedures

Piloting

In essence, the importance of the pilot test is to analyze the effectiveness or challenges of the study's research protocol and instruments ahead of the main study (Lavrakas, 2008). According to Connelly (2008), a large number of research experts propose that the sample size of a pilot study should be 10% of the proposed sample for the main study. The pilot test for this study was conducted by administering the questionnaire to 10% of the sampling frame elements, representing about three public universities.

Data Collection

The data collection procedure for this study involved the researcher acquiring an introductory letter for data collection from the department. The researcher then proceeded to issue printed questionnaires to the sampled population, collected after the respondent confirmed they had filled them.

Data Analysis

The researcher utilized the Statistical Package for Social Sciences (SPSS) software version 25 to analyze the primary data collected for this study. Data were cleaned to address outliers and missing values. The SPSS commands were used to generate descriptive and inferential statistics. To determine the association between the dependent variable (procurement performance of public universities) and the information risk, the researcher conducted a simple linear regression analysis of the data obtained for each variable. The regression model utilized was:

$$Y = \beta_0 + \beta_1x + E$$

Whereby:

Y represents the procurement performance of public universities

β_0 represents regression line intercepts

β_1 represents the slope

x represents the information risk

E represents error term

Research Ethics

The researcher complied with the research ethics, including informed consent, confidentiality, and data safety. The necessary permission from the university and NACOSTI were also sought before commencing with data collection.

4.1 Findings

Response rate and Reliability

A total of 31 questionnaires were distributed to the respondents, and 30 of them were filled and returned. This represents a response rate of 96.78%. According to Morton et al. (2012), there is no direct relationship between a study's response rate and its validity. However, it is always advisable to have an average response rate of 80% and above.

All items satisfied the reliability criteria as shown in table 1 below.

Table 1: Reliability Results

Variable	No. of Items	Cronbach Alpha
Outsourcing Cost Risk	7	0.776
Reputation Risk	6	0.770
Information Risk	8	0.884
Risk of lock in an incompatible relationship	7	0.825
Procurement Performance	5	0.828

N=30

Creswell (2014) argues that a coefficient value of 0.7 qualifies a given research instrument as reliable. A value of 0.8 is considered good, while 0.9 and above achieves an excellent rating for the research instrument. Based on this argument, the coefficient values obtained for this study indicated that the research instruments used are reliable because they are above 0.8.

4.2 Demographic Characteristics

The demographics details of the participants were analyzed and presented using table 2 below.

Table 2: Participants’ demographic characteristics

Variable	Characteristic	Frequency	Percentage
Position Held in the Organization	Chief procurement officer	4	13.3
	Procurement officer	10	33.3
	Assistant procurement officer	7	23.3
	Warehouse manager	9	30.0
	Total	30	100.0
Number of Years Worked at the Institution	Less than 2 years	2	6.7
	2 to 4 years	9	30.0
	5 to 7 years	12	40.0
	More than 7 years	7	23.3
	Total	30	100.0
Does the Institution Outsource Products and Services?	Yes	30	100.0
	No	0	0
	Total	30	100.0

The results show that all the participant had knowledge and experience in the procurement department; hence, the information provided is dependable for this analysis.

4.3 Descriptive Analysis

The respondents strongly agreed that poor communication between the public university and outsourcing partners contributes to procurement inefficiencies (mean = 4.5333, SD = 0.50742). Respondents also strongly agreed Ineffective communication between the public university and outsourcing partners causes an increase in supply lead time (mean = 4.5333, SD = 0.50742). Respondents strongly agreed that Sharing data with external suppliers exposes the university to the threat of hacking (mean = 4.5000, SD = 0.77682). Additionally, respondents agreed that Data breaches in the university's information systems might lead to inefficiencies in service delivery (mean = 4.4000, SD = 0.49827). Respondents also agreed that the loss of confidential data might lead to a loss of customer trust in the university (mean = 4.1667, SD = 0.37905). Respondents also agreed that Poor data policies might compromise the integrity of the university's database (mean = 4.1667, SD = .37905).

Table 3: Descriptive Statistics on Information Risk

Statements	N	Mean	Std. Deviation
Poor communication between the public university and outsourcing partners contributes to procurement inefficiencies	30	4.5333	.50742
Ineffective communication between the public university and outsourcing partners causes an increased supply lead time.	30	4.5333	.50742
Sharing data with external suppliers exposes the university to the threat of hacking	30	4.5000	.77682
Data breaches in the university's information systems may lead to inefficiencies in service delivery	30	4.4000	.49827
Loss of confidential data may lead to loss of customer trust in the university	30	4.3667	.55605
Outsourcing may lead to the loss of confidential data in public universities	30	4.3000	.46609
Loss of confidential university data can expose the institution to huge financial losses	30	4.1667	.37905
Poor data policies may compromise the integrity of the university's database	30	4.1667	.37905
Valid N (listwise)	30		

In this study, the researcher found out that public universities suffered huge financial losses in the event of losing their confidential data. The findings agree with conclusions made in the study by Diana *et al.* (2015), who found that infringement of information confidentiality is a risk that would lead to financial losses in an organization. In their study, Kwaa-Aidoo and Agbeko (2018) found that public universities considered students and research data their most valuable information system assets. The conclusions by Kwaa-Aidoo and Agbeko (2018) would explain why public universities would suffer financial losses if they lost their confidential data. It also explains why data breaches in the university's information systems may lead to inefficiencies in service delivery within public universities.

4.4 Inferential Analysis

The correlation between information and procurement performance of public universities was -0.654 and was significant at 0.00. The value implies that when information risk increases by one unit, there is a 0.654 decline in procurement performance. The correlation value is also negative, but strong, implying that information risk and procurement performance of public universities are negatively, but strongly correlated. The interpretation was that information risk decreased procurement performance of public universities moderately.

The dependent variable (procurement performance) was regressed on predicting variable (information risk). Information risk significantly predicts procurement performance ($F= 8.109$, $p = .008$, which indicates that the independent variable has a significant impact on procurement performance. More so, $R^2 = 0.03$ depicts that reputation risk explains 3.0% of the variance in

procurement performance. Additionally, coefficients were further assessed to ascertain the influence of reputation risk on the criterion variable. The results revealed that the independent variable has a significant positive impact on procurement performance ($\beta = 0.054$, $t=0.284$ $p = .008$).

Table 4: Simple Linear Regression on Information Risks

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.054 ^a	.003	-.033	.37496	

a. Predictors: (Constant), Information Risk

ANOVA was used to determine whether the simple linear regression with information risk as the independent variable and procurement performance of Kenyan public universities as the dependent variable was reliable. The P-value was used to establish this reliability. The minimum requirement for reliability of the model was a p value less than 0.05 ($p < 0.05$). The results were presented in the table 5.

Table 5: Coefficients for Information risk and Procurement Performance of Public Universities

Coefficients^a					
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	2.651	.343		7.730	.007
Information Risk	-1.859	.162	-1.953	-11.457	.013

a. Dependent Variable: Procurement Performance

A unit increase in information risk will lead to a 1.859 decrease in procurement performance. the relationship is also significant, given that it scored a p-value of 0.013 ($p < 0.05$). The results can be inserted into the initial model to generate a model of the form:

$$Y = 2.65 - 1.859X$$

The equation can be used as a predictive model by substituting the intended value and evaluating the change in the dependent variable.

5.1 Conclusions

Study participants strongly agreed that poor communication between the public university and outsourcing partners contributes to procurement inefficiencies. Respondents also strongly agreed Ineffective communication between the public universities and outsourcing partners causes an increased supply lead time. Respondents strongly agreed that sharing data with external suppliers

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exposes the university to the threat of hacking. Additionally, respondents agreed that Data breaches in the university's information systems might lead to inefficiencies in service delivery. Respondents also agreed that loss of confidential data might lead to loss of customer trust in the university. Respondents also agreed that Poor data policies might compromise the integrity of the university's database.

Based on multiple linear regression findings, the study concludes that the information risk negatively impacts the procurement performance of public universities in Kenya. Based on the risk model, this study concludes that universities should undertake to mitigate information sharing risk since it contributes to negative procurement performance. Public universities cannot be able to avoid these risks as they arise from them engaging in outsourcing of their goods, works, and services. However, they can mitigate these risks by minimizing their occurrence. Minimizing these risks will require actively and continuously monitoring the identified risks and communicating to all stakeholders when they arise.

6.1 Recommendations

Public universities reduce their information risk by ensuring their vendors sign an additional non-disclosure agreement when signing their contracts. A non-disclosure agreement legally prevents the vendors from sharing any information and data shared by the outsourcing public university with another third-party. Such an agreement effectively guarantees the confidentiality of the public university's data. Moreover, the service-level agreement should also include additional clauses that safeguards confidentiality and proprietary rights of all public university's proprietary assets.

Based on the findings made in this research, the study suggests that future researchers should focus on studying the effect of outsourcing risks on the financial performance of public universities in Kenya. While this study may have established that the outsourcing risks that impact the procurement performance of public universities, there is a need for these institutions to understand the specific impact they would have on their financial performance. On the other hand, future researchers should focus on understanding strategies that public universities should adopt in dealing with the outsourcing risks they incur during the outsourcing process. The findings of this study will help inform public universities on how to manage the risks to avoid them from negatively impacting their performance.

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