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An Assessment of the Performance of Small and Medium Enterprises in Developing Countries Based on Automated Procurement Systems and the Dynamic Capabilities Theory

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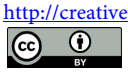

Abstract

The main objective of the study was to carry out an assessment of the performance of SMEs in Lusaka, Zambia, based on automated procurement systems and Dynamic Capabilities Theory. The research objectives were aimed at finding out the role of e-tendering, e-ordering and e-logistics on organizational performance. The study was carried out in Lusaka Central District of Lusaka Province. The study adopted a descriptive research design. The study sample comprised 400 respondents and adopted the simple random sampling method. To carry out this study, a structured questionnaire was developed and pretested. It contained close-ended questions. Questionnaires were distributed to the respondent and 14 days were given to respondent to complete questionnaires before collection. Questionnaires were used as the main tools for collection of primary data and were delivered to the respondents directly with the guidance of the principal researcher and picked later at the agreed date. Data analysis involved cleaning, sorting, coding and keypunching of raw data collection from the field and processing for purposes of interpretation were analysed via Statistical Package for Social Science version 28 (SPSS) analysis software. Furthermore, quantitative data findings were presented using descriptive statistical tools like graphs, tables and other measures of central tendency. An analysis of the first research variable regarding e-tendering revealed that it has a significant effect on organizational performance with a *P*-value of 0.000. The second research variable regarding e-ordering was not supported and proved to not have an effect on organization performance and indicated a *P*-value of 0.48. An analysis of the last research variable regarding e-logistics revealed a huge significance between e-logistics and organizational performance and the

analysis indicated that the performance of SMEs relies on e-logistics with a *P*-value of 0.000. The study recommends that SMEs enhance system integration for transparency, cost reduction, resource management and flow of information, leverage technology, and facilitate training.

Keywords

Automated Procurement Systems, Organizational Performance, Small and Medium Enterprises, E-Tendering, E-Ordering, E-Logistics, Dynamic Capabilities Theory, Zambia

1. Introduction

In the current competitive SMEs world, technology is seen as one of the main forces behind many organizations. It does this by lowering costs (transactions involving less paper), speeding up transactions, and increasing transparency through transaction automation (Ziba & Phiri, 2017). Griffin (2003) described organizational performance as the extent to which the organization is able to meet the needs of its stakeholders and its own needs for survival. This formulation broadened the concept of organizational performance beyond strictly market-focused measures such as profit margin, market share or product quality, all of which are important to certain stakeholders and overall organizational survival, to include a number of other non-financial factors. Automation of procedures for the purchase through e-procurement technology enables companies to achieve a reduction in costs (average 8% - 12%) of total purchases (Biraori Oteki, 2021). A successful e-procurement system needs to include every component needed for buyers and sellers to communicate efficiently, from supplier appraisal to procurement planning data. For e-procurement to operate smoothly, buyers and sellers should both have electronic access to each other's personal data as needed. According to Ilhan and Rahim (2017), companies that use automated procurement systems typically see gains in terms of operations, tactics, and strategy. The advantages of operations encompass reduced expenses on paper, reduced transaction costs, and expedited purchase order processing, which results in time savings. The paper goes on to say that in order to achieve the tactical gains, the e-procurement system has further helped to decrease maverick buying, better understand purchasing demands, and increase decision-making skills.

In a study on e-procurement, supplier integration, and supply chain performance in SMEs in South Africa, Madzimure et al. (2020) discovered that e-design and e-negotiation had a major positive impact on supply chain integration. The study also showed that there is a positive and significant linear association between supplier integration and the intangible and tangible aspects of supply chain performance. According to Afolabi et al. (2019), e-procurement also improves information management and gives management a big chance to supervise the whole base supply and have command over the procurement procedure. As the research goes on to

explain, the approach also promotes better ties with the suppliers and makes bill payment quick and easy. The impact of procurement and inventory management methods on organizational performance was studied by Masudin et al. (2018). The study's conclusions demonstrated that automated procurement techniques, such as e-products, improve organizational performance. The study also discovered that implementing best-in-class procurement procedures and managing inventories both improve organizational performance.

However, in order to attain operational efficiency, automated procurement systems have been used in many SMEs operations. Tsai and Tsai (2003) state that achieving cost efficiency is a key driver of e-procurement adoption, as it enables organizations to reduce their operating expenses. Information and communications technology is used in many SMEs, including supermarket retail operations, for tasks like inventory management, point-of-sale operations, advertising, supply chain management, and customer service. These activities are necessary to achieve operational efficiency.

SMEs, especially those in developed nations, are progressively implementing Information and Communication Technology (ICT) with the aim of increasing operational efficiency. One of the earliest companies to use Information and Communication Technology (ICT) in its management practices was Walmart, according to Breznitz and Zysman (2013). By utilizing modern ICT platforms to connect with its suppliers, Wal-Mart was able to increase operational efficiency.

Small and medium-sized enterprises, which have contributed to a crucial part of Zambia's enterprising, provide formal marketplaces with value chains that can spark local development and even offer the potential for agro-processing for export. The liberalization of Zambia's economy in the early 1990s brought about a number of changes for the country's SMEs. From 1968 until 1991, the retail industry in Zambia was dominated by state-owned companies like Mwaiseni, the National Import and Export Corporation (NIEC), National Home Stores, and the Zambia Consumer and Buying Corporation (ZCBC), in addition to several conventional small-scale family-owned companies. This applied particularly to the nation's retail industry. State-Owned Enterprises (SOEs) were in danger of going bankrupt near the end of the United National Independence Party's (UNIP) rule, and empty shelves were the norm.

Since the early 2000s, the number of SMEs in Zambia and other southern African countries has increased dramatically. Other areas of the region have also noticed this increase and notably driving the region's trade patterns in home consumables and processed goods, which creates vast new markets for the region's numerous SMEs. The national policies and laws that are currently in place throughout the region must be harmonized in order to take into account a broader perspective on the development of regional value chains, if local SMEs are to become a primary conduit for suppliers to regional markets (Surahman & Suramli, 2018). A number of South African grocery brands that have had a significant impact in Zambia include Shoprite, Pick'n'Pay, Game Stores, Food Lovers, and Spur (Ziba & Phiri, 2017).

Choppies, a recent addition to the group, is originally from Botswana. In Zambia, there are a handful of neighbourhood stores run by natives of Zambia. These include various small SMEs in specific areas of Lusaka and Melissa, which has most of its stores in Lusaka.

In line with the background, the purpose of this study is to assess the performance of SMEs in Lusaka Central District based on Automated procurement systems and the Dynamic Capabilities Theory.

2. Literature Review

There is a growing need for organizations to enhance their supply chain management, operational efficiency, and logistical responsiveness to evolving market dynamics and customer demands. The use of computers, the Internet, and integrated information systems, in particular, is fast changing how various SMEs supply goods and services. This is known as information and communication technology.

Kithinji's (2015) research was aimed at assessing the influence of information technology on inventory management within supermarkets located in Nairobi. The study aimed to assess the level of IT system utilization in inventory management inside supermarkets located in Nairobi, as well as to evaluate the influence of IT adoption on inventory management performance within these supermarkets in Nairobi. The research design employed in this study was descriptive in nature. The research conducted achieved a response rate of 70%. The data analysis was conducted with descriptive statistics and regression analysis techniques. The findings of the study indicate that supermarkets in Nairobi have used vendor-managed inventory systems and warehouse management systems to a significant degree. Supermarkets should invest more in using modern technologies, like Information and Communication Technology (ICT), to achieve integration, lower communication costs, increase productivity, and make information sharing easier. It is anticipated that these efforts will eventually lead to improved performance. The performance of Nairobi's supermarkets and the use of information technology for inventory management were found to be positively correlated by the regression data analysis.

Investigating the hierarchical influence of Internet of Things (IoT) capabilities on Supply Chain Integration (SCI), Supply Chain Capability (SCC), and Firm Performance (FP) in the UK retail industry was the main goal of the study carried out by Argyropoulou et al. (2023). A logical approach was taken in conducting this study. In order to investigate the theoretical hypotheses guiding the relationships between Internet of Things Capability (IoTC), Supply Chain Integration (SCI), Supply Chain Collaboration (SCC), and Firm Performance (FP), the study used Structural Equation Modelling (SEM) with the partial least square method (SmartPLS 3.3.3). An online survey that was sent to senior executives from 66 different companies involved in the UK retail sector was used to collect the data for this study. These companies ranged in size from huge to medium-sized SMEs. The study's conclusions show that

the financial performance of the retail industry in the United Kingdom (UK) is significantly and favorably impacted by the Internet of Things in Commerce (IoTC). Supply Chain Collaboration (SCC) and Supply Chain Integration (SCI) both have a role in mediating this effect.

3. Theoretical Framework and Conceptual Framework

3.1. Dynamic Capabilities Theory

The dynamic capabilities approach (Teece et al., 1997) has roots in the organization's Resource-Based View (RBV) (Barney, 2001) for building firms' long-term advantages and competitive flexibility. It further explains how firms can develop distinctive and difficult-to-replicate capabilities by adding, modifying, or re-configuring resources or competences when the existing value-generating resources and capabilities become outdated due to environmental dynamism (Danneels, 2011; Eisenhardt & Martin, 2000; Teece et al., 1997). Dynamic capabilities thus enable firms to identify the micro-foundations under girding firm-level sensing, seizing, and re-configuring capabilities that can be simultaneously developed and applied (Teece, 2007). Through dynamic capabilities, a firm can alter "how it currently makes a living" (Helfat & Winter, 2011: p. 1244) as they are distinguishable from a firm's operational capabilities (Helfat & Winter, 2011). A complete comprehension of the fundamental work processes of the company is necessary to comprehend dynamic capabilities (Eisenhardt & Martin, 2000). The organizational procedures, techniques, and structures that the company used to operate its SMEs in the past have an impact on its dynamic capacities (Teece, 2007). Path dependencies may limit the dynamic construction exercise in the steel industry setting, according to Ludwig and Pemberton's (2011) argument. Dynamic skills are not associated with complex managerial thought processes with protracted phases of creation and implementation; rather, they are the product of ongoing activity and find their root in everyday managerial routines.

3.2. Conceptual Framework

Overview of conceptual framework

Based on the conceptual framework adopted, as shown in **Figure 1**, the study used e-tendering, e-ordering, and e-logistics as indicators of automated procurement systems, which were meant to be explanatory variables in the model. On the other hand, performance of SMEs within Lusaka Central District was used as the dependent variable measured by its indicators: reduced operational costs, timeliness and real-time response to clients. Hence, the study aimed at assessing how the explanatory variables affect organizational performance in terms of profitability, effectiveness, and efficiency.

4. Methodology

This chapter explained the study parameters required to comprehend and justify

the appropriate research procedure and tools for data collection, analysis, and interpretation. As a result, this chapter assisted in understanding and defining various research methodologies and tools in order to select the most relevant one to answer the research aim and objectives. It further discussed the research design, population, procedures, methodology methods for data sampling, collection, and analysis, research limitations, and ethics.

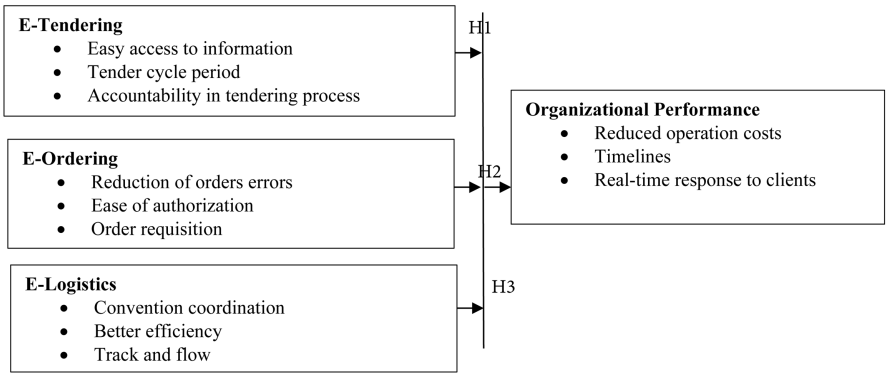

Figure 1. Conceptual framework.

4.1. Research Design

This study was based on a quantitative research design. According to Kothari (2004), a research design is the setting of conditions for collection of data that seeks to meet the purpose of the study. For this reason, a descriptive research design was best suited for this research. Thus, a descriptive research design fitted this study since it established the relationship between the independent variables and dependent variables.

4.2. Population Size

Population size was the entire group under the study, it is the universe from which the sample is to be selected (Creswell & Creswell, 2018). The population that was considered for the purpose of conducting the research project was SMEs within Lusaka Central District that are registered with Patent and Companies Registration Agency (PACRA). The total number of SMEs registered within Lusaka Central District is 10,001 (PACRA, 2024).

4.3. Sample Size

The sample size comprised 400 people from the general public that work in SMEs entities within Lusaka Central District. Therefore, sample size was derived using the formula (Trochim, 2007) as follows:

$$n = \frac{N}{1 + Ne2} \tag{1}$$

where: n = sample size; n = total population; e = margin error (0.05);

n = 10,001/1 + 10,0013 (0.05^2);

n = 10,001/25.005;

n = 399.96.

4.4. Sampling Technique

A purposive sampling technique was used in identifying the individuals selected for the purpose of conducting the research, this sampling technique is non-probability sampling technique. **Non-probability sampling** was used in identifying the sample, this sampling procedure does not afford any basis for estimating the probability that each item in the population has of being included in the sample (Bell & Waters, 2014).

4.5. Data Collection

The research study relied on primary and secondary data. Primary data is collected via questionnaires from general public who reside in Lusaka Central District, whilst secondary data is collected through journals, reports, and dissertations.

4.6. Data Analysis

The process of applying statistical and/or logical methods in a methodical manner in order to describe and illustrate, condense and recap and assess data is referred to as data analysis (Creswell & Creswell, 2018). A number of different analytic approaches, as stated by Bell and Waters (2014), "provide a way of drawing inductive inferences from data and distinguishing the signal (the phenomenon of interest) from the noise (statistical fluctuations) present in the data".

Spearman's correlation analysis was used and performed in SPSS version 27, which was further used to conduct the analysis of the data that was obtained and lastly, it was used to analyze the Regression Model and ANOVA.

5. Results

In this chapter, a presentation based on the results obtained from the analysis of demographics and quantitative data pertinent to the effect of automated procurements systems on the performance of SMEs within Lusaka Central district. Descriptive statistics was used to describe the basic features of the data in the study to provide simple summaries about the characteristics of a sample and the measure which formed the basis of visualization of what the data was showing. Inferential statistics was used to test the hypotheses, estimate the population parameters, and perform regression analysis, as it helps to draw the conclusion from a sample and generalize them to a population.

5.1. Pearson's Correlations

The relationship between constructs of this study was determined by Pearson correlation. Correlation values above 0.70 show a very strong positive correlation, those between 0.5 and 0.70 indicates strong correlation, 0.3 to 0.5 shows moderate correlation and lastly, those between 0.1 and 0.3 indicate relatively weak correlation.

(Pallant, 2010) eluded that any correlation above 0.80 may cause worry as it indicates the presence of multi-collinearity. Below is the table of Pearson correlation for this study.

Mobile Payments, E-Cards and E-Cheques Reduction in Delivery Time

Table 1 shows that the results of Pearson correlations between independent variables (mobile payments reduction in delivery time) and the dependent variable being organizational performance (e-cards and e-cheques reducing delivery time) show that the variables were significantly correlated ($P < 0.01$ and $P < 0.05$). The correlation values were positive, indicating positive relationships between the two variables with the correlation value being 0.510.

Table 1. Mobile payments, e-cards and e-cheques reduction in delivery time.

Correlations			
		Mobile payments greatly reduce delivery time	E-cards and e-cheques greatly reduce delivery time
Mobile payments greatly reduce delivery time	Pearson correlation	1	0.510**
	Sig. (2-tailed)		0.000
	N	339	339
E-cards and e-cheques greatly reduce delivery time	Pearson correlation	0.510**	1
	Sig. (2-tailed)	0.000	
	N	339	339

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

5.2. Regression Model

Regression analysis is a form of inferential statistics and to achieve the objective of the study, a multiple regression model was used to help assess the results and draw up conclusions on the assumptions or hypothesis of the study.

Table 2 shows the regression model summary for the predictors e-logistics, electronic payments and cost reduction, electronic catalogues and customer satisfaction, mobile payments and cost reduction help determine the effect that the predictors have on the outcome variable by assessing the variations in R2 that can be traced back to the predictors.

5.3. ANOVA Model

Based on the results of the ANOVA (Table 3), the model shows that it is highly significant, hence, we can proceed to assess the effect because the *P*-value of F ratio is 66.205 < 0.05 (*P*-value = 0.000). This shows that performance of SMEs is significantly affected, and the proportionate variations can be predicted from the independent variable.

Table 2. Regression model summary.

Model	R	R square	Adjusted R square	Std. error of the estimate	Change statistics					Durbin-Watson
					R square change	F change	df1	df2	Sig. F change	
1	0.640[a]	0.410	0.408	0.720	0.410	233.815	1	337	0.000	
2	0.656[b]	0.431	0.427	0.709	0.021	12.430	1	336	0.000	
3	0.670[c]	0.449	0.445	0.698	0.019	11.450	1	335	0.001	
4	0.675[d]	0.456	0.449	0.695	0.006	3.928	1	334	0.048	2.019

[a]Predictors: (Constant), e-logistics is more convenient and efficient than physical monitoring; [b]Predictors: (Constant), e-logistics is more convenient and efficient than physical monitoring, mobile payments greatly reduce costs; [c]Predictors: (Constant), e-logistics is more convenient and efficient than physical monitoring, mobile payments greatly reduce costs, electronic tracking and monitoring allow you to track goods from departure to the arrival of goods; [d]Predictors: (Constant), e-logistics is more convenient and efficient than physical monitoring, mobile payments greatly reduce costs, Electronic tracking and monitoring allow you to track goods from departure to the arrival of goods, Electronic catalogues reduce costs; Dependent variable: Electronic monitoring cost effective.

Table 3. ANOVA model.

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	121.370	1	121.370	233.815	0.000[a]
	Residual	174.931	337	0.519		
	Total	296.301	338			
2	Regression	127.610	2	63.805	127.088	0.000[b]
	Residual	168.691	336	0.502		
	Total	296.301	338			
3	Regression	133.185	3	44.395	91.177	0.000[c]
	Residual	163.115	335	0.487		
	Total	296.301	338			
4	Regression	135.082	4	33.770	69.962	0.000[d]
	Residual	161.219	334	0.483		
	Total	296.301	338			

[a]Predictors: (Constant), e-logistics is more convenient and efficient than physical monitoring; [b]Predictors: (Constant), e-logistics is more convenient and efficient than physical monitoring, mobile payments greatly reduce costs; [c]Predictors: (Constant), e-logistics is more convenient and efficient than physical monitoring, mobile payments greatly reduce costs, Electronic tracking and monitoring allow you to track goods from departure to the arrival of goods; [d]Predictors: (Constant), e-logistics is more convenient and efficient than physical monitoring, mobile payments greatly reduce costs, electronic tracking and monitoring allow you to track goods from departure to the arrival of goods, Electronic catalogues reduce costs; Dependent variable: Electronic monitoring cost-effective.

6. Recommendations

This chapter summarizes the study that was undertaken by concluding the research on how automated procurement systems affect the performance of SMEs within Lusaka Central District, and then from the conclusion, recommendations are drawn to highlight certain aspects that SMEs can use to influence the usage of automated procurement systems to increase the operational efficiencies and enhance these platforms to maintain a competitive edge in the entrepreneurship environment at large.

- As per the finding, SMEs are encouraged to automate their e-tendering process as this would reduce unethical behaviours, as well as reduce operational costs and promote ethical procurement behaviours.
- Additionally, SMEs should also indulge in e-logistics as this would make tracking and monitoring of their goods in transit easy and cost-effective. This would help the performance by operational cost reduction, as well as reduction in cases of theft and mismanagement of company resources.
- And lastly, despite e-ordering having an effect on organizations like the other two variables, it is important to note that they might not be aware of its significance, hence the low usage among SMEs. Therefore, there is a need to foster and encourage the adoption of e-ordering.

7. Limitations

This study was limited to examining the effect of automated procurement systems on organizational performance of SMEs in Lusaka Central District. Having been limited to SMEs within Lusaka Central District, the study cannot be generalized to other parts of Zambia. The study therefore suggests further studies on the influence of automated procurement systems on organizational performance of firms in other parts of Zambia. Furthermore, this study found that the independent variables (e-logistics and e-tendering) have an effect on organizational performance, hence the suggestion for further studies on factors that affect the organizational performance of SMEs within Zambia.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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