

Investigating The Major Factors That Hinder The Full Adoption Of E-Commerce In Small And Medium Enterprise: A Case Study Of Serenje

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Abstract:

Background

The study investigated the major factors hindering the full adoption of e-commerce by Small and Medium Enterprises (SMEs) in Serenje District of Central Province, Zambia. Despite the increasing importance of electronic commerce in enhancing efficiency and competitiveness, many SMEs in Serenje have not fully embraced e-commerce, thereby limiting their operational effectiveness and market reach. The aim of the study was to determine the major factors that hinder the full adoption of e-commerce, to establish the manifest value or benefits of e-commerce in comparison to its latent value or benefits, and to make policy recommendations that would encourage SMEs to adopt e-commerce in order to improve service delivery to consumers.

Material and Methods Used: This study adopted a descriptive research design and employed a mixed (quantitative and qualitative) methodology using questionnaires for data collection. From a population of 140 registered SMEs in Serenje, a sample of 40 SMEs was selected using a cluster sampling technique, and owners or managers were sampled as respondents. Data we analyzed and presented using descriptive and distributional statistical methods.

Results: The findings revealed that several factors hinder the full adoption of e-commerce among SMEs, with lack of educational background by management, particularly in information technology skills and knowledge, being the most significant factor. Other hindering factors included the high cost of maintaining internet services, resistance to change, unreliable internet access, and low usage of e-commerce among stakeholders such as customers, suppliers, and partners.

Conclusion: The study implies that addressing managerial ICT skills, improving internet accessibility, and creating supportive policies are critical for enhancing e-commerce adoption among SMEs.

Keywords: E-commerce, Adoption, Information and Communication Technology, Consumer

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I. Introduction

In the emerging global economy, electronic commerce (e-commerce) and electronic business have increasingly become a necessary component of business strategy in developing countries and a strong catalyst for Zambia's economic development. The integration of Information Technology and Communication Technology (ICT) in business has revolutionized relationships within organizations, including business-to-business and business-to-consumer interactions. The use of Information Communication Technology (ICT) in business has generally enhanced productivity, encouraged greater customer participation, enabled mass customization, and reduced operational costs. Through appropriate strategies and supportive policy approaches, e-commerce has the potential to level the playing field by enabling small and medium enterprises (SMEs) to compete with large and capital-rich businesses.

II. Material And Methods

Research Design: A cross-sectional research design was used, allowing data to be collected from respondents at a single point in time.

Study Location: Study was conducted in the Rural Serenje District Business Center, central Province of Zambia

Study Duration: January 2024-May 2024

Sample Size: 40

Sample Size Calculation: The Yamane formula was used for the calculation of sample size. $n = N / (1 + N(e)^2)$
n= Sample size,
N= Population under study
e= Margin of error 0.1, **e²**=0.01

Subject and Selection Method: The target population for the study comprised 140 registered Small and Medium Enterprises operating in Serenje District. From this population, a sample size of 40 SMEs was selected using a cluster sampling technique. Owners or managers of the selected SMEs were sampled as respondents as they were responsible for decision-making processes and determining how systems operate within their enterprises. Primary data were obtained directly from these owners or managers, making them the main data source for the study.

Inclusion Criteria:

Registered Small and Medium enterprise within Serenje.
 Annual turn-over less than K50,000,000 (USD 2,500,000).
 Business Affiliated to Serenje District Council Bureau

Exclusion Criteria:

Unregistered Small and Medium Enterprises
 Large Firms with annual Turn-over above K50,000,000 (USD2,500,000)
 Business not within Serenje District Catchment Area

Procedure Methodology

Data for the study was collected using a structured questionnaire. The questionnaire was designed to capture information on the extent of e-commerce adoption, perceived benefits of e-commerce, and the major factors hindering its full adoption among SMEs. The use of questionnaires was appropriate as it allowed for the collection of standardized data from multiple respondents within a relatively short period and ensured consistency in responses across the sampled SMEs.

Both qualitative and quantitative data obtained from the questionnaires was analyzed using the Statistical Package for Social Sciences (SPSS) and Microsoft Excel. Descriptive and distributional statistical methods were used to analyze and present the data in a clear and systematic manner. The results were summarized using tables and percentages to facilitate interpretation and comparison of findings.

III. Findings / Results

This section presents the findings of the study on the major factors hindering the full adoption of electronic commerce among Small and Medium Enterprises (SMEs) in Serenje District. The results are organized thematically to clearly reflect the patterns that emerged from the data collected through questionnaires administered to SME owners and managers.

Management Educational Background and ICT Skills

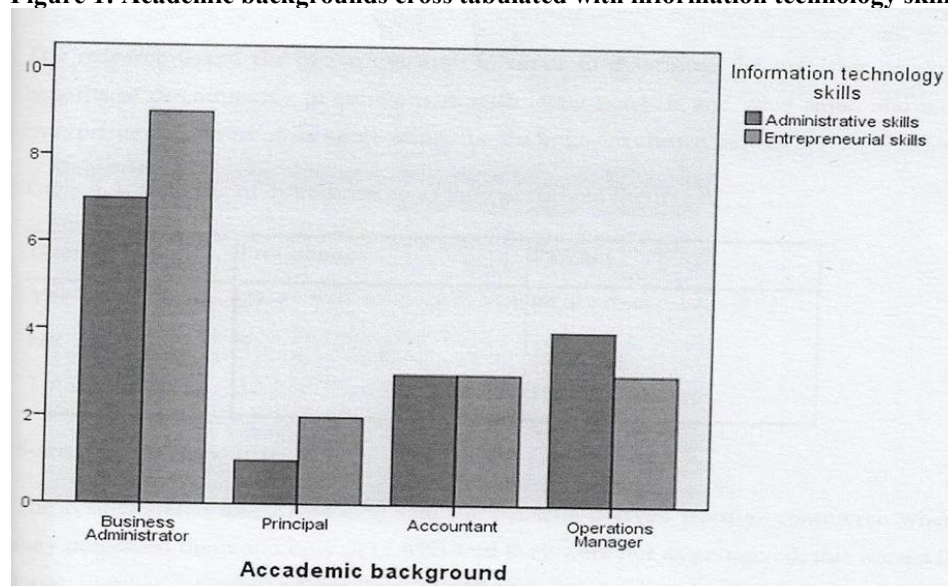
The findings revealed that lack of educational background by management, particularly in information technology skills and knowledge, was the most significant factor hindering the full adoption of electronic commerce among SMEs. Most owners and managers indicated limited understanding of e-commerce systems, which negatively affected their ability to implement and manage electronic business platforms effectively. This finding demonstrates a clear pattern in which inadequate ICT competence at managerial level directly constrains e-commerce adoption.

Table 1 presents respondents' levels of ICT knowledge and management educational background.

Academic Background	Frequency	Percent
Administrator	16	50.0
Principle	3	9.4
Accountant	6	18.8
Operation Managers	7	21.9
Total	32	100.0

Table 1 illustrates a variety of academic background across the sample. The majority (50%) of the respondent were Business Administrators, 7(21.9%) were Operation managers, 6(18.8%) were accountants, 3(9.4%) were Principles. This study indicates that no record of any respondent with Information and Technology academic background, which is an important aspect to this information technology age. This could probably be one of the factors for the implication of not having the full adoption of e-commerce. This should be a concern for SMEs to have ICT specialists on the level of motivation to use ICTs in the organization.

Figure 1: Academic backgrounds cross tabulated with information technology skills



The graph 1: above indicates academic background of Owners or Managers of SMEs and compares it to their information technology skills. According to graph 4.7, the numbers on the y-axis represent the number of employees and the x-axis their academic background.

With these, nine respondents who had Business Administration academic had entrepreneurial skills, this is an internal factor because most of them had administration background and clearly shows why most of these SMEs have not fully adopted electronic commerce. These

Findings are in harmony with Jaidee and Beaumont (2003) who stated that Owners/ Managers with administrative styles are more likely to succeed than those with entrepreneurial skills.

Cost of Internet and Maintenance Challenges

The study further established that SMEs found it difficult and expensive to maintain internet services. High costs associated with internet connectivity, equipment maintenance, and system upgrades were cited as major barriers. These financial constraints limited the ability of SMEs to sustain consistent online business operations. This theme highlights the economic challenges faced by SMEs in adopting technology-dependent business models.

Table 2 shows the distribution of responses on internet cost and maintenance challenges.

Hindering factors	Frequency	Percent
No hindering factors.	5	15.6
It's expensive to maintain the internet e.g. software and services needed for e-commerce.	8	25.0
Unreliable internet access.		
Lack of educational background e.g. IT skills and knowledge since Zambia is still developing	3	9.4
Resistance to change	11	34.4
Low usage amount public of ecommerce	3	9.4
Total	2	6.2
	32	100.0

In the above table 2.0 represents several factors that hinder SMEs from having full adoption of e-commerce in their enterprises. 8(25.0%) was expensive for them to maintain the internet in terms of software and the services needed for e-commerce, 5(15.6) had no factors that hindered their full adoption of e-commerce, 3(9.4%) said internet access was unreliable 3(9.4%) said it's because of resistance to change and 2(6.2%) was because of low usage amongst their stake holders.

Resistance to Change

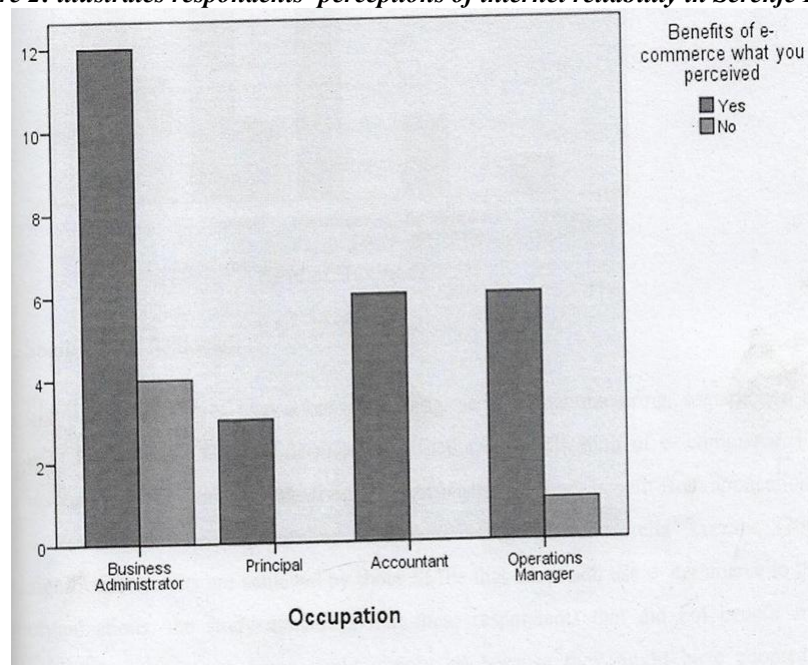
Resistance to change emerged as another key factor hindering the full adoption of e-commerce. Some SME owners and managers expressed reluctance to shift from traditional business methods to electronic systems.

This resistance was linked to fear of technology, uncertainty about benefits, and lack of confidence in using digital platforms. The findings indicated a behavioral pattern that affects technology acceptance within SMEs.

Internet Reliability and Infrastructure Limitations

Unreliable internet access was also identified as a major barrier. Respondents reported frequent network disruptions and inconsistent connectivity, which discouraged continuous use of e-commerce platforms. This infrastructural challenge reduced trust in electronic systems and negatively affected business operations that depend on real-time online transactions.

Figure 2: illustrates respondents' perceptions of internet reliability in Serenje District

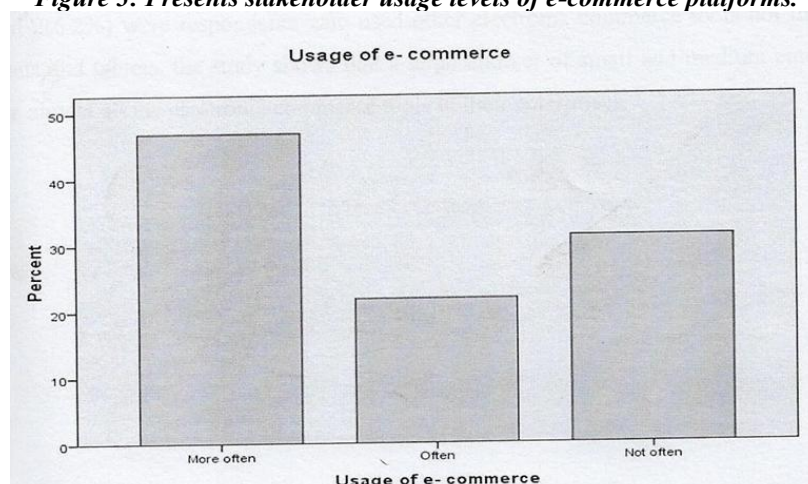


The results in figure 2 above stated that a significant number of Owners or Managers with Business Administration academic background indicated; the benefits derived from E- commerce were as they perceived them. Low proportion of these enterprises said they were not as perceived.

Low Usage Among Stakeholders

The results further showed low usage of e-commerce among key stakeholders such as customers, suppliers, partners, and the wider community. SMEs reported that even when electronic systems were available, limited stakeholder participation reduced their effectiveness. This pattern suggests that e-commerce adoption is influenced not only by internal SME factors but also by external stakeholder readiness.

Figure 3: Presents stakeholder usage levels of e-commerce platforms.



The results clearly shows that 15(46.9%) use E-commerce more often, 10(31.2%) use it not often and 7(21.9%) use it often. Therefore, Small and Medium Enterprise uses it more often in their enterprises even if they have not fully adopted it as shown in the graph 3 above.

Summary of Key Findings

Overall, the findings indicated full adoption of electronic commerce among SMEs in Serenje District is hindered by a combination of managerial, financial, technological, infrastructural, and stakeholder-related factors. These results provide a clear empirical basis for the discussion and interpretation presented in the subsequent section.

IV. Discussion

The findings indicate that the lack of educational background and inadequate information technology (IT) skills among owners and managers is the most significant factor hindering full adoption of e-commerce among Small and Medium Enterprises (SMEs) in Serenje District. This result underscores the central role of managerial competence in technology adoption decisions. Owners and managers are key decision-makers within SMEs, and their limited ICT knowledge reduces their confidence and ability to initiate, implement, and sustain e-commerce systems. Similar observations have been made in previous studies, which emphasize that managerial awareness and technological capability are critical determinants of e-commerce adoption in SMEs (Kapurubandara & Lawson, 2006; Al-Dmour et al., 2012).

The findings of this study are consistent with Jaidee and Beaumont (2003), who argue that owners and managers with administrative and managerial competencies are more likely to succeed in adopting organizational innovations than those relying solely on entrepreneurial skills. This alignment suggests that structured planning, control, and understanding of information systems are essential for successful e-commerce implementation. From a theoretical perspective, this supports technology adoption models that emphasize organizational readiness and human capital as key drivers of innovation adoption within firms (Rogers, 2003).

In addition to managerial capacity, the study confirms that structural and technological challenges remain major barriers to e-commerce adoption, even when SMEs recognize its benefits. High internet costs, unreliable connectivity, and difficulties in maintaining internet services significantly limit SMEs' ability to use electronic platforms effectively. These findings are supported by Alonso-Mendo et al. (2009), who note that inadequate infrastructure and high operational costs continue to hinder effective use of internet-based technologies in developing economies. Similarly, Kapurubandara and Lawson (2006) highlight that external environmental barrier, such as poor infrastructure and limited institutional support, compound internal organizational challenges faced by SMEs.

The study also reveals that resistance to change and low usage of e-commerce among stakeholders such as customers, suppliers, and partners further constrain adoption. This observation aligns with prior research suggesting that technology adoption is influenced not only by internal organizational factors but also by the readiness and acceptance of external stakeholders within the business environment (Soliman & Janz, 2003). Where customers and suppliers are slow to embrace electronic transactions, SMEs have limited incentives to fully adopt e-commerce systems.

From a practical perspective, these findings imply that organizations, managers, and policymakers must adopt a holistic approach to promoting e-commerce adoption among SMEs. Capacity-building initiatives aimed at improving ICT skills among SME owners and managers are essential. In addition, government and supporting institutions should invest in improving internet infrastructure, reducing connectivity costs, and creating supportive policy frameworks that encourage technology adoption. Overall, the study reveals that the problem of limited e-commerce adoption among SMEs is multidimensional, rooted in managerial, technological, infrastructural, and environmental constraints that must be addressed collectively to achieve meaningful and sustainable adoption.

V. Conclusion

This study investigated the major factors hindering the full adoption of e-commerce among Small and Medium Enterprises (SMEs) in Serenje District of Central Province, Zambia. The key findings indicate that organizational factors, particularly the lack of information technology skills and educational background among owners and managers, significantly hinder the effective adoption of e-commerce. In addition, structural and environmental challenges such as high internet costs, unreliable connectivity, resistance to change, and low usage of e-commerce among stakeholders further constrain full implementation. These findings confirm that although SMEs recognize the benefits of electronic commerce, several interrelated barriers limit its institutionalization.

The study contribute to existing knowledge on e-commerce adoption by providing context-specific evidence from a district-level perspective in a developing country. By focusing on SMEs in Serenje District, the study adds to the limited empirical literature on technology adoption challenges faced by SMEs operating outside

major urban centers. The findings reinforce the importance of managerial capacity and supportive infrastructure in facilitating e-commerce adoption among SMEs.

From a practical perspective, the study recommends that organizational factors within SMEs be addressed through capacity-building initiatives aimed at improving ICT skills among owners and managers. There is also a need for a conducive and supportive environment from the government and supporting industries, particularly in improving internet infrastructure, reducing connectivity costs, and formulating policies that encourage the adoption of e-commerce. These measures would enhance efficiency and effectiveness in service delivery and improve the competitiveness of SMEs.

Despite its contributions, the study has limitations. It focused on a relatively small sample of SMEs within a single district, which may limit the generalizability of the findings to other regions. The study also relied primarily on questionnaire data, which may be influenced by respondents' perceptions and self-reporting.

Future research should consider expanding the study to other districts or provinces to allow for comparative analysis. Further studies could also employ mixed methods of approaches to gain deeper insights into e-commerce adoption processes and examine the long-term impact of e-commerce on SME performance. Such research would provide a more comprehensive understanding of e-commerce adoption in Zambia and similar developing country contexts.

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