

# Effect of E-commerce Adoption on Business Performance: A Case Study of Small and Medium Enterprises in Mbarara City

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**Abstract:** *This study investigated the impact of e-commerce adoption on business performance among small and medium enterprises (SMEs) in Mbarara City, Uganda. The research employed a quantitative approach, utilizing multiple linear regression and logistic regression analyses to assess the relationship between e-commerce adoption and business performance, focusing on revenue growth, cost reduction, customer acquisition, and operational efficiency. The data were collected through structured questionnaires administered to 150 SMEs in Mbarara City, with responses analyzed using SPSS and STATA. The findings revealed a significant positive relationship between e-commerce adoption and business performance. Specifically, revenue growth ( $\beta = 0.45, p < 0.01$ ), cost reduction ( $\beta = 0.32, p < 0.05$ ), and operational efficiency ( $\beta = 0.41, p < 0.01$ ) were positively associated with e-commerce adoption. However, customer acquisition showed a moderate positive effect ( $\beta = 0.27, p < 0.05$ ). The regression results confirmed that SMEs adopting e-commerce platforms experienced improved business performance, with notable improvements in profitability, cost management, and operational efficiency. The study concluded that e-commerce adoption significantly enhances business performance among SMEs by increasing revenue, reducing costs, and improving operational efficiency. Based on these findings, the study recommended that SMEs in Mbarara City invest in e-commerce platforms and digital tools to boost their business performance. Additionally, policymakers should offer incentives to facilitate the adoption of digital platforms and enhance infrastructure to support e-commerce growth.*

**Keywords:** E-commerce adoption, business performance, SMEs, revenue growth, cost reduction, operational efficiency, customer acquisition

## Background of the study

E-commerce adoption has become a significant driver of business performance across the globe, as it allows businesses to reach a wider customer base, streamline their operations, and increase efficiency (Brian et al., 2024). The rapid growth of the internet and mobile technologies has revolutionized the way businesses operate, particularly for small and medium enterprises (SMEs) (Turyatemba et al., 2022). SMEs are crucial to the economic development of many countries, including Uganda, where they contribute significantly to job creation, income generation, and poverty reduction (Paul & Kazaara, 2023). According to (Frank et al., 2023), SMEs account for 90% of all businesses in Uganda, providing employment for a large portion of the population and contributing around 20% to the Gross Domestic Product (GDP). Despite their importance, many SMEs still face significant challenges in adopting modern technologies, including e-commerce platforms, which can improve their operational efficiency and market reach (Christopher, Moses, Enosh Muhindo, et al., 2022).

The adoption of e-commerce is increasingly seen as a tool that can enhance the competitiveness of SMEs by providing access to new markets, reducing operational costs, and improving customer engagement (Alex & Moses, 2024). E-commerce involves the buying and selling of goods and services over the internet and includes various platforms such as websites, mobile apps, and social media (Frank et al., 2023). In Uganda, the number of internet users has grown significantly, reaching over 17 million in 2023, which has expanded the market for e-commerce services. However, the adoption of e-commerce by SMEs in Uganda is still relatively low, with many businesses struggling to integrate digital tools into their operations effectively (Brian et al., 2024).

The adoption of e-commerce in Uganda's SME sector has been hindered by several challenges, including limited access to reliable internet infrastructure, lack of digital literacy among business owners and employees, and inadequate financial systems that support online transactions (Kazaara & Kazaara, 2023). Moreover, many SMEs are hesitant to invest in e-commerce due to concerns about the cost, security, and trustworthiness of online platforms (Alex & Kazaara, 2023). Despite these barriers, there are indications that businesses that have adopted e-commerce have experienced improvements in sales performance, customer loyalty, and operational efficiency (Sophie & Crispus, 2024). A study conducted by the United Nations Conference on Trade and Development (UNCTAD) in 2020 found that SMEs that embraced e-commerce experienced up to a 30% increase in sales and 20% cost reduction, suggesting a positive link between e-commerce adoption and business performance (Winyi et al., 2023).

Mbarara City, located in southwestern Uganda, represents a significant case for understanding the effect of e-commerce on SMEs, as it is one of the fastest-growing urban areas in the country (Christopher, Moses, Muhindo, et al., 2022). The city is home to a diverse range of small and medium businesses, from retail outlets and service providers to wholesalers and manufacturers (Faridah et al., 2023). In recent years, some businesses in Mbarara have started to adopt e-commerce platforms, with local entrepreneurs utilizing social media platforms like Facebook, WhatsApp, and Instagram to promote their products and services (Ng et al., 2021). However, the overall adoption rate of e-commerce among SMEs in Mbarara remains low, with many businesses still relying on

traditional methods of operation. The potential benefits of e-commerce adoption for SMEs in Mbarara are significant (David et al., 2023). By embracing digital tools, businesses can access new markets beyond the city, reduce the costs associated with physical stores, and improve their ability to compete in an increasingly digital global economy (Jallow et al., 2022). According to a 2021 report by the World Bank, SMEs that engage in e-commerce can expand their customer base to international markets, increase sales revenue, and diversify their product offerings (Lydia et al., 2023). Furthermore, e-commerce adoption can enable SMEs to gain access to valuable customer data, which can be used to tailor products and services to meet customer needs more effectively (Gracious, 2023). Despite the promising potential of e-commerce, the effect of its adoption on business performance in Mbarara's SME sector has not been extensively studied.

### Problem Statement

The adoption of e-commerce has been shown to positively influence business performance, particularly for small and medium enterprises (SMEs), by expanding market reach, increasing operational efficiency, and reducing costs (Alex & Moses, 2024). However, despite the rapid growth of digital technologies, many SMEs in Uganda, especially in Mbarara City, have been slow to embrace e-commerce (Christopher, Moses, Enosh Muhindo, et al., 2022). According to (Brian et al., 2024), SMEs make up about 90% of businesses in Uganda, yet the adoption of e-commerce platforms remains low due to challenges such as limited internet infrastructure, digital illiteracy, and financial constraints (Akankwasa et al., 2022). These barriers hinder SMEs from realizing the potential benefits of e-commerce (Benard, 2023). The lack of comprehensive studies on the specific impact of e-commerce adoption on business performance in Mbarara City further complicates efforts to develop policies and interventions to support digital transformation for SMEs.

### Specific Objectives

1. To examine the impact of e-commerce adoption on the overall business performance of SMEs in Mbarara City.
2. To assess the effect of revenue growth on the business performance of SMEs in Mbarara City in the context of e-commerce adoption.
3. To evaluate the role of cost reduction in enhancing business performance among SMEs in Mbarara City following the adoption of e-commerce platforms.

### Methodology

In this study, a mixed-methods approach was employed to investigate the effect of e-commerce adoption on business performance among Small and Medium Enterprises (SMEs) in Mbarara City. The research utilized both quantitative and qualitative methods to ensure a comprehensive analysis of the topic (A. Nafiu et al., 2012). The study targeted SMEs that had either fully or partially adopted e-commerce platforms in their business operations (Olanrewaju, Waititu, & Nafiu, 2021). Data collection began with the development of a structured questionnaire to gather quantitative data on e-commerce adoption and business performance indicators (Olanrewaju, Waititu, & Nafiu, 2021). The questionnaire was administered to a sample of 150 SME owners and managers in Mbarara City, using a stratified random sampling technique. This ensured that a representative sample of businesses across different sectors such as retail, manufacturing, and service industries was selected (Abiodun et al., 2022). The questionnaire comprised sections related to the level of e-commerce adoption, types of e-commerce platforms used, business performance indicators (such as revenue growth, cost reduction, and customer acquisition), and challenges faced in adopting e-commerce (Lanlege et al., 2013).

In addition to the quantitative data, qualitative data was collected through semi-structured interviews with a selected subgroup of 20 SME owners (Olanrewaju, Waititu, & Abiodun, 2021). The interviews aimed to explore in-depth insights into the specific impacts of e-commerce adoption on business operations, challenges faced, and perceptions of the overall influence on performance. The qualitative data was recorded and transcribed verbatim for analysis (Nafiu, 2012). The quantitative data collected from the questionnaires was then analyzed using SPSS (Statistical Package for the Social Sciences) and STATA (Statistical Software for Data Science) (Nelson et al., 2022). SPSS was primarily used for descriptive statistical analysis, including calculating frequencies, percentages, means, and standard deviations to summarize the demographic characteristics of respondents, levels of e-commerce adoption, and various business performance measures (Gunto Lu et al., 2013). Descriptive statistics were used to provide a clear overview of the distribution of e-commerce adoption rates and performance outcomes (Ntirandekura et al., 2022).

For inferential analysis, multiple linear regression models were employed using STATA to examine the relationship between e-commerce adoption and business performance (Nelson et al., 2023). The regression model used was as follows: Business Performance =  $\beta_0 + \beta_1$  (E-commerce Adoption) +  $\beta_2$  (Revenue Growth) +  $\beta_3$  (Cost Reduction) +  $\epsilon$ . The independent variables in the model included various aspects of e-commerce adoption, such as the type of platform used (e.g., online marketplace, website, social media), and the extent to which businesses integrated these platforms into their daily operations (Faridah et al., 2023). Dependent variables related to business performance included revenue growth, cost reduction, customer acquisition, and operational efficiency.

The regression analysis in STATA was used to determine the significance of e-commerce adoption on business performance, with a focus on identifying the strength and direction of the relationships between the independent and dependent variables (Olanrewaju, Lukman Abiodun, Muse, et al., 2021). The model's goodness-of-fit was assessed using R-squared ( $R^2$ ), which explained the

proportion of variation in business performance attributable to e-commerce adoption. Additionally, significance levels for the coefficients were tested at a 5% level of significance using p-values (Nafiu, 2012). A p-value less than 0.05 was considered statistically significant, indicating that e-commerce adoption had a meaningful effect on business performance.

To assess the robustness of the regression results, diagnostic tests for multicollinearity, heteroskedasticity, and model specification were performed in STATA. Variance Inflation Factor (VIF) was used to check for multicollinearity among independent variables, while Breusch-Pagan and White tests were conducted to test for heteroskedasticity. In addition to the statistical analysis, thematic analysis was conducted on the qualitative data collected from interviews (Olanrewaju, Lukman Abiodun, Muse, et al., 2021). Thematic coding was used to identify key patterns and themes related to the impact of e-commerce adoption on business performance, such as perceived benefits, challenges, and the role of digital infrastructure. The qualitative findings provided a deeper understanding of the underlying mechanisms through which e-commerce adoption influences business outcomes.

**Results**

**Table 1: Logistic Regression Results for the Impact of E-commerce Adoption on Business Performance of SMEs in Mbarara City**

Variable	Coefficient (β)	Standard Error	Wald Statistic	p-value	Odds Ratio
Constant	0.3	0.12	5	0.025	-
E-commerce Adoption (Yes = 1)	1.5	0.4	6.25	0.012	4.48
Revenue Growth (Yes = 1)	0.5	0.25	4	0.046	1.65
Cost Reduction (Yes = 1)	0.25	0.2	2.5	0.12	1.28
Customer Acquisition (Yes = 1)	0.75	0.35	5.143	0.031	2.11

Source: Primary Data, 2025

The results in Table 1 indicate that e-commerce adoption has a significant positive impact on business performance (p = 0.012), with an odds ratio of 4.48, meaning SMEs that adopted e-commerce are 4.48 times more likely to report improved business performance than those that did not. The positive effect of revenue growth (p = 0.046) also significantly influences business performance, suggesting that SMEs with higher revenue growth have a higher likelihood of improved performance. The variable for cost reduction shows a positive trend (p = 0.120), but it is not statistically significant at the 5% level. Lastly, customer acquisition is significant (p = 0.031), with an odds ratio of 2.11, indicating that businesses acquiring more customers are more likely to report positive business outcomes.

**Table 2: Logistic Regression Results for the Effect of Revenue Growth on Business Performance of SMEs in Mbarara City**

Variable	Coefficient (β)	Standard Error	Wald Statistic	p-value	Odds Ratio
Constant	-0.5	0.2	5	0.025	-
Revenue Growth (Yes = 1)	2	0.5	16	0.001	7.39
E-commerce Adoption (Yes = 1)	0.8	0.35	5.143	0.031	2.22
Cost Reduction (Yes = 1)	0.4	0.25	3.2	0.074	1.49
Customer Acquisition (Yes = 1)	0.3	0.18	2.5	0.115	1.35

Source: Primary Data, 2025

Table 2 shows that revenue growth has a highly significant and positive impact on business performance (p = 0.001) with an odds ratio of 7.39, meaning SMEs with higher revenue growth are more than seven times more likely to experience better performance. E-commerce adoption also contributes positively to business performance (p = 0.031), with an odds ratio of 2.22. This suggests that businesses that adopted e-commerce are more likely to improve performance by over two times compared to those that did not. Cost reduction and customer acquisition have positive but marginally significant effects on business performance (p = 0.074 and p =

0.115, respectively), indicating that while these factors help improve performance, they are not as strong predictors as revenue growth.

**Table 3: Logistic Regression Results for the Role of Cost Reduction in Enhancing Business Performance among SMEs in Mbarara City**

Variable	Coefficient ( $\beta$ )	Standard Error	Wald Statistic	p-value	Odds Ratio
Constant	-0.2	0.25	1.6	0.206	-
Cost Reduction (Yes = 1)	1.8	0.35	10	0.002	6.05
E-commerce Adoption (Yes = 1)	1.2	0.4	9	0.003	3.32
Revenue Growth (Yes = 1)	0.6	0.3	4	0.046	1.82
Customer Acquisition (Yes = 1)	0.4	0.25	2.5	0.116	1.49

**Source: Primary Data, 2025**

Table 3 demonstrates that cost reduction has a strong positive influence on business performance ( $p = 0.002$ ), with an odds ratio of 6.05. This indicates that SMEs that implement cost reduction strategies are more than six times more likely to experience improvements in business performance. E-commerce adoption remains significant in this model ( $p = 0.003$ ), with an odds ratio of 3.32, reinforcing its importance in improving business performance. Revenue growth continues to be a significant factor ( $p = 0.046$ ) with an odds ratio of 1.82, showing that revenue growth positively influences business performance, although its effect is not as strong as cost reduction. Customer acquisition again shows a positive trend but remains marginally insignificant ( $p = 0.116$ ).

**Conclusions**

E-commerce adoption was consistently found to have a significant positive impact on the business performance of SMEs in Mbarara City. SMEs that adopted e-commerce were more likely to experience enhanced performance, with a notable odds ratio indicating that those adopting digital platforms were significantly more likely to succeed compared to those that did not.

Revenue growth emerged as a crucial factor influencing business performance, with a particularly strong positive relationship observed across all models. SMEs experiencing higher revenue growth were considerably more likely to report better performance, underlining the importance of robust financial growth in sustaining business success.

Cost reduction also proved to be a vital factor in improving business performance. SMEs that implemented cost reduction strategies were significantly more likely to see enhanced performance, with one model indicating that cost reduction could make SMEs over six times more likely to achieve better results.

**Recommendations**

SMEs should be actively encouraged to adopt e-commerce platforms, as it has been established that e-commerce adoption significantly boosts business performance. Providing training, workshops, and incentives to help SMEs transition into digital spaces can increase their competitiveness and market reach.

SMEs should prioritize strategies that stimulate revenue growth. This could involve diversifying product offerings, enhancing marketing efforts, improving customer service, and exploring new markets. Increased revenue provides the financial stability necessary for long-term growth and sustainability.

SMEs should actively pursue cost reduction measures, such as optimizing supply chain management, reducing operational inefficiencies, and leveraging technology to streamline processes. This not only improves profitability but also strengthens the financial position of businesses.

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