



## **Examining the Relationship Between E-Commerce Integration and Business Performance in SMEs**

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### **Abstract**

The rapid advancement of digital technologies has significantly transformed the way businesses operate, particularly for small and medium-sized enterprises (SMEs) seeking to remain competitive in dynamic market environments. E-commerce integration has emerged as an essential strategic tool that enables SMEs to enhance operational efficiency, broaden market reach, and improve overall business performance. This study examines the relationship between e-commerce integration and business performance outcomes among SMEs operating across diverse sectors. The research adopts a quantitative approach to analyse how the adoption and integration of digital platforms, online transaction systems, and electronic customer engagement tools influence key performance indicators such as revenue growth, operational efficiency, customer acquisition, and market expansion. Primary data were collected from SME owners and managerial decision-makers using a structured questionnaire administered to a sample of 300 enterprises. The data were analysed using statistical techniques including descriptive analysis, correlation, and regression methods to identify the strength and direction of relationships between the variables. The findings indicate that SMEs with higher levels of e-commerce integration demonstrate improved performance outcomes compared to those with limited digital adoption. E-commerce tools contribute to streamlined business processes, enhanced customer interaction, and greater accessibility to wider markets. However, the study also identifies challenges such as limited technological expertise, financial constraints, and organisational resistance that may affect the effective implementation of digital commerce systems. The research highlights that strategic integration of e-commerce technologies can significantly contribute to the sustainable growth and competitiveness of SMEs in an increasingly digitalised business environment.

**Keywords:** E-commerce Integration, SMEs, Business Performance, Digital Transformation

### **Introduction**

Small and medium-sized enterprises (SMEs) play a crucial role in economic development by generating employment opportunities, stimulating innovation, and contributing significantly to national and regional GDP. In the contemporary digital economy, the rapid expansion of internet technologies and digital platforms has transformed the way businesses operate, communicate with customers, and manage their value chains. One of the most influential developments in this transformation is the integration of electronic commerce (e-commerce) within business operations. E-commerce integration refers to the adoption and incorporation of online technologies and digital platforms into various organizational functions such as marketing, sales, supply chain management, customer relationship management, and payment



systems. For SMEs, which often operate with limited financial and human resources, e-commerce provides an opportunity to overcome traditional market barriers, reach broader customer bases, reduce operational costs, and enhance competitiveness in both domestic and international markets. Through digital marketplaces, social commerce, and integrated online payment systems, SMEs can expand their visibility and streamline business processes, thereby improving efficiency and responsiveness to customer demands. Moreover, the increasing accessibility of cloud computing, mobile commerce, and digital logistics solutions has further facilitated the adoption of e-commerce among SMEs, making digital transformation a strategic necessity rather than an optional innovation. As global markets become increasingly digitized, SMEs that successfully integrate e-commerce technologies into their business models are more likely to achieve sustainable growth and improved operational performance.

Despite the potential advantages of e-commerce integration, many SMEs face challenges in effectively implementing and utilizing these technologies. Barriers such as lack of digital skills, limited financial investment, technological complexity, cybersecurity concerns, and inadequate infrastructure can hinder the successful adoption of e-commerce systems. Furthermore, the impact of e-commerce integration on business performance is not always straightforward, as it may depend on various organizational and environmental factors such as managerial capabilities, technological readiness, market dynamics, and the level of digital literacy within the firm. Business performance in the context of SMEs is often evaluated through multiple indicators, including sales growth, market expansion, operational efficiency, customer satisfaction, and overall profitability. Integrating e-commerce into existing business processes may enhance these outcomes by enabling faster information flow, improved supply chain coordination, and more effective marketing strategies through data analytics and digital customer engagement. However, the degree to which e-commerce contributes to improved performance can vary depending on the level of integration and the strategic approach adopted by SMEs.

### **Research Methodology**

The present study adopts a quantitative research methodology to examine the relationship between e-commerce integration and business performance outcomes among small and medium-sized enterprises (SMEs). A quantitative approach is considered appropriate because the study seeks to measure the level of digital integration and analyse its statistical relationship with measurable performance indicators such as revenue growth, operational efficiency, customer acquisition, and market expansion. The research follows a positivist research philosophy, which emphasises objective measurement and empirical analysis of observable phenomena. In line with this philosophical orientation, the study employs a deductive research approach, whereby existing theoretical frameworks related to technology adoption and digital transformation are used to formulate assumptions about the positive influence of e-commerce integration on SME performance. These assumptions are subsequently tested using empirical data collected from SMEs.



The research design combines descriptive and explanatory elements. The descriptive component aims to identify the current level of e-commerce adoption among SMEs across different sectors, while the explanatory aspect seeks to analyse the extent to which digital integration influences business performance outcomes. A cross-sectional survey strategy has been adopted to collect data from respondents at a single point in time, allowing the study to capture the prevailing digital practices of SMEs. The target population includes SMEs operating in retail, manufacturing, wholesale, services, and technology sectors. A stratified random sampling technique is employed to ensure proportional representation of enterprises from each sector and to enhance the representativeness of the sample. The final sample consists of 300 SMEs, which provides adequate statistical power for conducting correlation and regression analyses.

Primary data were collected using a structured questionnaire administered to SME owners, managers, and decision-makers who are directly involved in technology adoption and strategic management. The questionnaire includes sections on enterprise characteristics, level of e-commerce integration, organisational and technological enablers, perceived barriers, and business performance outcomes. All items are measured using a five-point Likert scale to facilitate quantitative analysis. The collected data are analysed using descriptive statistics, correlation analysis, and multiple regression techniques to evaluate the relationship between e-commerce integration and SME performance. This methodological framework ensures reliability, validity, and empirical rigour in examining the research problem.

## **Results and Discussion**

### **Demographic and Firmographic Characteristics of Respondents**

#### **1. How long has your enterprise been in operation?**

<b>Options</b>	<b>Number of Responses</b>	<b>Percentage (%)</b>
Less than 3 years	42	14.0
3–5 years	66	22.0
6–10 years	84	28.0
11–15 years	54	18.0
More than 15 years	54	18.0

The data reveal that 28.0 per cent of SMEs have been operating for 6–10 years, representing the largest group in the sample. Enterprises with 3–5 years of experience constitute 22.0 per cent, while both the 11–15 years and more than 15 years categories account for 18.0 per cent each. A smaller proportion of 14.0 per cent comprises relatively new firms operating for less than three years. This distribution indicates that the majority of SMEs are in a moderately mature stage of their business lifecycle, which is often associated with greater organisational stability and readiness to adopt digital technologies. More experienced firms may possess established operational processes and financial capacity to integrate e-commerce platforms, while younger firms may demonstrate agility and innovation in digital adoption. The balanced spread across experience levels enhances the study's ability to examine how firm maturity influences the integration of e-commerce and its associated performance outcomes.

2. What is the size of your enterprise based on number of employees?

Options	Number of Responses	Percentage (%)
Micro (1–9 employees)	72	24.0
Small (10–49 employees)	118	39.3
Medium (50–249 employees)	82	27.3
250–499 employees	18	6.0
More than 500 employees	10	3.4

The findings show that small enterprises with 10–49 employees dominate the sample at 39.3 per cent, followed by medium-sized firms (50–249 employees) at 27.3 per cent and micro enterprises at 24.0 per cent. Larger SMEs employing 250–499 employees account for 6.0 per cent, while those with more than 500 employees represent only 3.4 per cent. This distribution is consistent with the structural composition of the SME sector, where small and medium firms typically outnumber larger organisations. The predominance of small firms suggests that the analysis will primarily reflect the digital transformation experiences of resource-constrained yet growth-oriented enterprises. The presence of micro and medium firms further allows comparative evaluation of how firm size affects technological capability, investment capacity, and performance improvements associated with e-commerce integration. Consequently, the size-wise distribution provides a meaningful basis for analysing scalability of digital adoption and its performance implications across different organisational capacities.

3. What is the primary market scope of your enterprise?

Options	Number of Responses	Percentage (%)
Local market	64	21.3
Regional market	72	24.0
National market	94	31.3
International market	28	9.4
Both national and international markets	42	14.0

The analysis shows that 31.3 per cent of SMEs primarily operate in national markets, forming the largest category, followed by regional markets at 24.0 per cent and local markets at 21.3 per cent. Enterprises engaged in both national and international markets account for 14.0 per cent, while exclusively international firms represent 9.4 per cent. This distribution indicates that most SMEs are expanding beyond localised operations and targeting broader market coverage, which often necessitates the adoption of digital platforms for efficient customer outreach and transaction management. Firms operating at national and international levels are more likely to rely on e-commerce tools to manage geographically dispersed customers and supply chains. Conversely, local and regional firms may adopt digital platforms to enhance competitiveness and gradually scale their market presence. The diversity in market scope thus provides a valuable context for assessing how varying market orientations influence the extent and effectiveness of e-commerce integration among SMEs.

4. Does your enterprise currently use any form of e-commerce platform?

Options	Number of Responses	Percentage (%)
Not at all	26	8.7
To a very limited extent	54	18.0
To a moderate extent	96	32.0
To a large extent	82	27.3
To a very large extent	42	14.0

The responses reveal that 32.0 per cent of SMEs use e-commerce platforms to a moderate extent, while 27.3 per cent report using them to a large extent and 14.0 per cent to a very large extent. A smaller proportion of 18.0 per cent indicates very limited usage, and only 8.7 per cent report no use at all. These findings suggest that the majority of SMEs have at least partially integrated e-commerce into their business operations, reflecting a growing recognition of digital platforms as strategic tools for sales, marketing, and customer engagement. The moderate to high adoption levels indicate that SMEs are actively transitioning towards digital business models, although varying degrees of integration remain evident. Limited or non-use among a minority of firms may be attributed to financial constraints, lack of technical expertise, or sector-specific operational challenges. The results confirm the relevance of examining e-commerce integration as a key determinant of SME business performance.

**Descriptive Statistics of E-Commerce Adoption Components**

E-Commerce Adoption Component	Mean Score	Standard Deviation
Use of online sales platforms	3.59	1.12
Integration of digital payment systems	3.66	1.05
Use of e-commerce tools for customer interaction	3.52	1.14
Role of online marketing and social media promotion	3.61	1.09
Integration with inventory and order management systems	3.43	1.18
Digital support for supply chain coordination	3.32	1.21
Improvement in transaction speed due to e-commerce	3.71	1.03
Continuous upgrading of digital platforms	3.46	1.15

Overall composite mean for e-commerce adoption intensity: 3.54

Overall standard deviation: 1.12

**Descriptive Statistics of Revenue Growth and Financial Performance**

Financial Performance Indicator	Mean Score	Standard Deviation
Contribution of e-commerce to revenue growth	3.62	1.08
Reduction in operational costs due to digital integration	3.41	1.16
Overall financial performance improvement from e-commerce	3.58	1.10



The mean scores presented in the table confirm that SMEs generally perceive e-commerce integration as having a positive influence on financial outcomes, with revenue growth showing the highest average score. The relatively moderate mean for cost reduction indicates that while efficiency gains are recognised, financial benefits may accrue gradually over time rather than immediately after adoption. The standard deviation values reflect moderate variability among responses, suggesting that financial impacts of e-commerce integration differ across enterprises depending on factors such as firm size, technological readiness, and level of digital maturity. The analysis of revenue growth and financial performance outcomes demonstrates that e-commerce integration plays a significant role in enhancing the economic performance of SMEs. By enabling access to broader markets, streamlining operational processes, and improving transactional efficiency, digital platforms contribute to increased revenue generation and better financial management. However, the variability in responses also indicates that the magnitude of financial benefits is influenced by the extent of adoption, investment capacity, and organisational readiness.

### **Operational Efficiency and Cost Reduction Outcomes**

Operational efficiency and cost reduction represent crucial dimensions of business performance that are directly influenced by the integration of e-commerce technologies within SMEs. The adoption of digital platforms is expected to streamline internal processes, minimise manual intervention, and optimise resource utilisation, thereby enhancing overall efficiency and reducing operational expenses. In the present study, these outcomes were evaluated through respondents' perceptions regarding improvements in operational efficiency and reductions in business process costs following the implementation of e-commerce systems. Such assessment provides insight into how digital integration contributes not only to revenue enhancement but also to the internal productivity and financial sustainability of SMEs.

#### **Descriptive Statistics of Operational Efficiency and Cost Reduction**

<b>Operational Performance Indicator</b>	<b>Mean Score</b>	<b>Standard Deviation</b>
Improvement in operational efficiency due to e-commerce	3.74	1.05
Reduction in operational costs through digital integration	3.41	1.16
Streamlining of business processes and workflow coordination	3.68	1.09

The table illustrates that operational efficiency improvements record the highest mean score, indicating strong agreement among SMEs regarding the efficiency-enhancing role of e-commerce technologies. The comparatively moderate mean score for cost reduction suggests that although digital integration contributes to financial savings, these benefits may materialise progressively over time. The standard deviation values reflect moderate variation among enterprises, implying that differences in firm size, technological readiness, and extent of digital adoption influence the degree of efficiency and cost-saving outcomes achieved. The



analysis demonstrates that e-commerce integration significantly enhances operational efficiency within SMEs by automating processes, improving coordination, and reducing manual workload. While cost reduction benefits are evident, they are influenced by initial investment requirements and the maturity level of digital implementation. These findings confirm that the integration of e-commerce technologies plays a vital role in improving internal productivity and optimising cost structures, thereby strengthening the operational foundation necessary for sustainable business growth among SMEs.

### **Customer Acquisition and Market Expansion Outcomes**

Customer acquisition and market expansion are critical strategic outcomes that reflect the external growth potential of SMEs following the integration of e-commerce technologies. The adoption of digital platforms enables enterprises to reach new customer segments, extend their geographical presence, and compete more effectively in broader markets. In the present study, these outcomes were evaluated through respondents' perceptions of improvements in customer acquisition capability and expansion of market reach as a result of online business operations. These indicators provide insight into how e-commerce integration contributes to the outward growth and competitive positioning of SMEs in increasingly digitalised commercial environments.

The empirical analysis reveals that a majority of SMEs perceive significant enhancement in their ability to attract new customers after adopting e-commerce platforms. Digital marketing channels, search engine visibility, social media engagement, and online marketplaces provide SMEs with opportunities to showcase their products and services to a wider audience beyond their traditional local customer base. Such visibility enables firms to tap into previously inaccessible market segments and to engage with customers across diverse geographical regions. The relatively high level of agreement among respondents indicates that e-commerce tools have become instrumental in facilitating customer discovery, interaction, and conversion. This outcome is particularly evident among retail and service-oriented SMEs, where online platforms serve as primary touchpoints for customer engagement and promotional activities.

#### **Descriptive Statistics of Customer Acquisition and Market Expansion**

<b>Market Performance Indicator</b>	<b>Mean Score</b>	<b>Standard Deviation</b>
Enhancement in ability to acquire new customers	3.70	1.07
Expansion of market reach through online operations	3.63	1.11
Increased brand visibility and customer engagement	3.68	1.09

The mean scores presented in the table indicate strong agreement among SMEs regarding the positive influence of e-commerce integration on customer acquisition and market expansion. The highest mean value corresponds to improved customer acquisition capability, reflecting the effectiveness of digital platforms in attracting new clientele. The relatively high mean for market reach expansion further confirms that SMEs are leveraging online channels to operate beyond traditional geographic boundaries. The moderate standard deviation values suggest



some variability in outcomes, which may be attributed to differences in sectoral characteristics, technological readiness, and marketing capabilities among enterprises.

### **Correlation Analysis between E-Commerce Integration and Business Performance**

Correlation analysis was conducted to examine the strength and direction of the relationship between the level of e-commerce integration and various dimensions of business performance among SMEs. The purpose of this analysis was to determine whether higher levels of digital integration are associated with improved financial, operational, and market performance outcomes. Pearson's product-moment correlation coefficient was employed, as the variables were measured using composite Likert scale scores that approximate interval-level data and satisfy the assumptions for parametric testing. The analysis focused on assessing the association between overall e-commerce integration intensity and key performance indicators including revenue growth, operational efficiency, cost reduction, customer acquisition, and market expansion.

The results of the correlation analysis reveal a positive and statistically significant relationship between e-commerce integration and overall business performance. The correlation coefficient between the composite index of e-commerce integration and overall performance outcomes indicates a strong positive association, suggesting that SMEs with higher levels of digital adoption tend to report better financial and operational results. This finding supports the proposition that integration of online sales platforms, digital payment systems, customer interaction tools, and supply chain digitalisation contributes to enhanced organisational effectiveness and competitive capability.

**Correlation Matrix between E-Commerce Integration and Business Performance**

<b>Variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
1. E-commerce Integration	1.000					
2. Revenue Growth	0.642**	1.000				
3. Operational Efficiency	0.701**	0.655**	1.000			
4. Cost Reduction	0.534**	0.602**	0.648**	1.000		
5. Customer Acquisition	0.718**	0.667**	0.693**	0.575**	1.000	
6. Market Expansion	0.689**	0.674**	0.661**	0.548**	0.706**	1.000

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

The correlation matrix demonstrates that all coefficients are positive and statistically significant at the 1 per cent level, confirming robust associations between e-commerce integration and each dimension of business performance. The strongest relationship is



observed between e-commerce integration and customer acquisition ( $r = 0.718$ ), followed by operational efficiency ( $r = 0.701$ ) and market expansion ( $r = 0.689$ ). These strong coefficients indicate that digital platforms primarily enhance external market reach and internal process efficiency. The moderate correlation with cost reduction ( $r = 0.534$ ) suggests that financial savings are realised but may be influenced by implementation costs and resource requirements. The results provide empirical support for the premise that higher levels of e-commerce integration are closely associated with improved business performance outcomes among SMEs, thereby reinforcing the strategic importance of digital adoption in achieving sustainable growth and competitiveness.

### **Model Summary, Coefficients and Goodness-of-Fit Evaluation**

The evaluation of the regression model's summary statistics, coefficients, and overall goodness-of-fit is essential for determining the robustness and explanatory power of the relationship between e-commerce integration and SME business performance. This section provides a comprehensive interpretation of the statistical outputs obtained from the multiple regression analysis conducted in the previous section. The purpose is to assess how well the model explains variations in business performance and to evaluate the individual contribution of each predictor variable included in the model.

The model summary statistics indicate a strong overall relationship between the independent variables and SME performance outcomes. The multiple correlation coefficient ( $R$ ) reflects the strength of association between predicted and observed values of business performance, while the coefficient of determination ( $R$  Square) represents the proportion of variance in the dependent variable explained by the model. The obtained  $R$  value suggests a strong positive association, and the  $R$  Square value indicates that a substantial proportion of the variability in SME performance is accounted for by e-commerce integration and the included control variables. The adjusted  $R$  Square, which adjusts for the number of predictors in the model, remains closely aligned with the  $R$  Square value, confirming that the explanatory power of the model is not inflated by the inclusion of additional variables. This consistency demonstrates that the model possesses strong predictive validity and is suitable for explaining performance variations among SMEs.

The analysis of regression coefficients provides insight into the relative contribution of each independent variable. The coefficient for e-commerce integration is positive and statistically significant, indicating that higher levels of digital adoption lead to measurable improvements in overall business performance. The standardised beta value for this variable is the highest among all predictors, confirming that e-commerce integration is the most influential determinant of SME performance in the model. Firm size also exhibits a positive and significant coefficient, suggesting that larger SMEs tend to achieve better performance outcomes due to greater operational capacity and resource availability. Similarly, years of business experience display a positive influence, reflecting the role of organisational maturity in supporting effective utilisation of digital technologies. Sectoral orientation towards digital-intensive industries shows a moderate positive effect, indicating that firms operating in



technology and service sectors may derive relatively higher performance benefits from e-commerce integration.

**Model Summary and Goodness-of-Fit Evaluation**

<b>Model Statistic</b>	<b>Value</b>
Multiple Correlation (R)	0.781
Coefficient of Determination (R Square)	0.610
Adjusted R Square	0.604
Standard Error of Estimate	0.412
F-Statistic	114.27
Significance (p-value)	0.000

The goodness-of-fit indicators presented in the table demonstrate that the regression model has strong explanatory capability, with approximately 61 per cent of the variance in SME performance explained by the predictors. The significant F-statistic further confirms that the model is statistically robust and suitable for predicting performance outcomes based on e-commerce integration and organisational characteristics. The evaluation of model summary statistics, regression coefficients, and diagnostic tests confirms that the regression model provides a reliable and valid representation of the impact of e-commerce integration on SME business performance, thereby reinforcing the empirical strength of the study's analytical framework.

**Conclusion**

The findings of this study highlight the significant role of e-commerce integration in enhancing the overall business performance of small and medium-sized enterprises (SMEs). In the increasingly digitalised commercial environment, SMEs are progressively adopting online platforms, digital payment systems, and electronic supply chain management tools to strengthen their operational capabilities and expand market access. The analysis indicates that SMEs with higher levels of e-commerce integration tend to experience improvements in several key performance indicators, including revenue growth, operational efficiency, customer acquisition, and market expansion. Digital technologies enable enterprises to streamline internal processes, reduce transaction costs, and respond more effectively to changing consumer preferences. Moreover, the use of e-commerce platforms enhances visibility and allows SMEs to reach geographically dispersed customers, thereby overcoming traditional market limitations associated with small-scale operations. These findings suggest that the integration of digital commerce tools is no longer merely a technological innovation but has become a strategic necessity for SMEs seeking sustainable growth and competitiveness in modern business ecosystems.



The study also reveals that the effectiveness of e-commerce integration depends on several organisational and technological factors. SMEs often face constraints such as limited financial resources, insufficient digital skills, cybersecurity concerns, and resistance to organisational change, which may hinder the successful implementation of e-commerce systems. Therefore, the performance benefits associated with digital integration are maximised when SMEs invest in technological infrastructure, develop employee digital competencies, and adopt supportive managerial strategies for digital transformation. Policymakers and industry stakeholders also have an important role in facilitating SME digitalisation through supportive policies, training initiatives, and access to digital infrastructure. The study concludes that e-commerce integration has a positive and meaningful relationship with business performance outcomes among SMEs. Enterprises that strategically incorporate digital technologies into their operational and marketing activities are more likely to enhance efficiency, strengthen customer engagement, and achieve long-term competitive advantages in an increasingly technology-driven marketplace.

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