



# The Role of E-commerce in SME Growth: Challenges and Opportunities

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## Abstract

This study examines the role of e-commerce adoption in driving small and medium enterprise (SME) growth, analyzing both the opportunities and challenges faced by SMEs in the digital marketplace environment. Drawing on data from 1,850 SMEs across six countries (India, Vietnam, Thailand, Philippines, South Africa, and Mexico) collected between 2019 and 2024, the research employs a longitudinal panel data approach combined with qualitative case studies to understand the mechanisms through which e-commerce influences firm performance. The analytical framework integrates the Resource-Based View (RBV) with dynamic capabilities theory to explain heterogeneity in e-commerce success among SMEs. Our findings reveal that e-commerce adoption is associated with a 34% average increase in annual revenue and 28% expansion in customer base, with these effects being mediated by digital marketing capabilities and supply chain integration. However, the study identifies significant challenges including digital skills gaps affecting 62% of SMEs, logistics infrastructure constraints impacting 48%, and payment system integration difficulties faced by 41% of firms. The results demonstrate that firm-level digital capabilities, particularly in data analytics and customer relationship management, moderate the relationship between e-commerce adoption and performance outcomes. Furthermore, ecosystem factors including platform support services, access to digital financing, and government digital initiatives significantly influence SME success in e-commerce. These findings provide actionable insights for SME managers developing digital strategies, platform operators designing SME support programs, and policymakers crafting inclusive digital economy policies.

**Keywords:** - E-commerce, SME growth, Digital transformation, Platform economy, Emerging markets.

## I. INTRODUCTION

The digital economy has fundamentally transformed the landscape of business opportunities, with e-commerce emerging as a critical driver of economic growth and enterprise development globally (UNCTAD, 2021). For small and medium enterprises (SMEs), which constitute over 90% of businesses and contribute approximately 70% of employment in most economies, e-commerce represents both an unprecedented opportunity for market expansion and a significant strategic challenge requiring new capabilities and resources (World Bank, 2020). The COVID-19 pandemic has dramatically accelerated e-commerce adoption, with global e-commerce sales increasing by 27.6% in 2020 alone, compelling SMEs to rapidly digitize their operations or risk obsolescence (OECD, 2021).

The potential of e-commerce to democratize market access for SMEs has generated considerable optimism among policymakers and development practitioners. By reducing geographical barriers, lowering transaction costs, and enabling direct connections between producers and consumers, e-commerce platforms can theoretically enable small firms to compete with larger incumbents on a more level playing field (Manyika et al., 2016). Success stories from markets such as China, where platforms like Alibaba have enabled millions of SMEs to access domestic and international customers, have reinforced this optimistic narrative (Luo et al., 2018).

However, the reality of SME e-commerce adoption is considerably more complex. While aggregate statistics suggest rapid growth in online commerce, evidence indicates that the benefits of e-commerce are unevenly distributed, with many SMEs struggling to translate digital presence into sustainable business growth (Bai et al., 2021). Challenges related to digital

skills, infrastructure, access to finance, and platform dependency create significant barriers to effective e-commerce utilization, particularly in emerging market contexts where these constraints are more pronounced (Cusolito et al., 2020).

This study addresses the need for nuanced understanding of e-commerce's role in SME growth by examining both opportunities and challenges across diverse emerging market contexts. The research makes three key contributions. First, it provides robust quantitative evidence on the relationship between e-commerce adoption and SME performance outcomes. Second, it identifies the critical capabilities and ecosystem factors that determine e-commerce success. Third, it documents the specific challenges SMEs face and potential pathways to overcome them. These insights are essential for SME managers, platform operators, and policymakers seeking to maximize the developmental potential of e-commerce.

## II. LITERATURE REVIEW

### 2.1. E-commerce and SME performance

The relationship between e-commerce adoption and SME performance has been examined through multiple theoretical lenses. From the Resource-Based View (RBV) perspective, e-commerce capabilities represent potentially valuable, rare, and difficult-to-imitate resources that can generate sustainable competitive advantage (Barney, 1991). Studies applying this framework have found that IT capabilities, including e-commerce infrastructure, are positively associated with firm performance, though the relationship is contingent on complementary organizational resources (Bharadwaj, 2000).

Dynamic capabilities theory provides an additional explanatory framework, suggesting that the ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments is critical for e-commerce success (Teece et al., 1997). Research has demonstrated that SMEs with stronger dynamic capabilities, particularly in sensing market opportunities and reconfiguring resources, achieve better outcomes from technology adoption (Zahra et al., 2006).

Empirical evidence on e-commerce and SME performance presents mixed findings. Studies in developed market contexts have generally found positive associations between e-commerce adoption and firm growth, productivity, and profitability (Brynjolfsson & Hitt, 2003). However, research in emerging markets reveals more heterogeneous outcomes, with some studies finding modest or insignificant effects, particularly among micro and small enterprises lacking complementary capabilities (Cusolito et al., 2020).

### 2.2. Challenges in SME e-commerce adoption

The literature has identified multiple categories of barriers to effective SME e-commerce adoption. First, resource constraints, including limited financial capital, human capital, and time, prevent many SMEs from making necessary investments in digital technologies and capabilities (Kapurubandara & Lawson, 2006). Studies consistently find that smaller firms face proportionally higher costs of technology adoption relative to their resources.

Second, digital skills gaps represent a critical barrier. Research indicates that SME owners and employees often lack the technical skills required for effective e-commerce operations, including website management, digital marketing, data analytics, and cybersecurity (Bordonaba-Juste et al., 2012). This skills deficit is particularly acute in emerging markets where digital education and training opportunities are limited.

Third, infrastructure constraints, including unreliable internet connectivity, inadequate logistics networks, and limited access to digital payment systems, impede e-commerce operations in many markets (UNCTAD, 2019). These infrastructure deficits create operational challenges that can undermine the viability of e-commerce business models for SMEs.

### 2.3. Platform ecosystems and SME success

The rise of e-commerce platforms has created new opportunities and challenges for SMEs. Platform-mediated markets offer SMEs access to established customer bases, payment systems, and logistics infrastructure, potentially lowering barriers to e-commerce entry (Parker et al., 2016). Studies have found that platform participation can significantly enhance SME visibility and sales, particularly for firms with limited resources for independent online presence (Rietveld & Eggers, 2018).

However, platform dependency creates its own challenges. Research has highlighted issues including intense price competition, commission structures that erode margins, and platform governance decisions that can disadvantage smaller sellers (Cutolo & Kenney, 2021). The power asymmetry between platforms and SME sellers raises concerns about the sustainability of platform-dependent business models for small firms.

## III. METHODOLOGY

### 3.1. Research design and sampling

This study employs a longitudinal mixed-methods design combining quantitative panel data analysis with qualitative case studies. The quantitative component comprises survey data collected from 1,850 SMEs across six emerging markets: India (n=400), Vietnam (n=350), Thailand (n=300), Philippines (n=300), South Africa (n=250), and Mexico (n=250). The sample was stratified by firm size (micro, small, medium), sector (retail, manufacturing, services), and e-commerce adoption status.

Data collection occurred in three waves: baseline (2019), mid-point (2021), and follow-up (2024), enabling analysis of longitudinal patterns in e-commerce adoption and firm performance. The panel structure allows for controlling individual firm heterogeneity and examining causal relationships more rigorously than cross-sectional designs. Attrition was managed through replacement sampling using propensity score matching to maintain sample representativeness.

The qualitative component includes 60 in-depth case studies of SMEs representing diverse adoption trajectories and outcomes. These cases were selected purposively to include successful adopters, struggling adopters, and non-adopters across different contexts. Semi-structured interviews with firm owners and managers explored the mechanisms, challenges, and strategies underlying e-commerce experiences.

### 3.2. Measures and analytical approach

E-commerce adoption was measured using a multi-dimensional scale capturing transactional capabilities (online ordering, payment processing), marketing capabilities (social media presence, search engine optimization), and operational integration (inventory management, customer relationship management). Firm performance outcomes include revenue growth, customer base expansion, profit margin changes, and market reach expansion.

The quantitative analysis employs fixed-effects panel regression models to estimate the relationship between e-commerce adoption and firm performance:  $Y(it) = \beta_0 + \beta_1 EC(it) + \beta_2 DC(it) + \beta_3 EC(it) \times DC(it) + \beta_4 X(it) + \mu(i) + \tau(t) + \varepsilon(it)$ , where  $Y$  represents performance outcomes,  $EC$  denotes e-commerce adoption intensity,  $DC$  captures digital capabilities,  $X$  includes control variables,  $\mu$  represents firm fixed effects, and  $\tau$  captures time fixed effects.

Additionally, propensity score matching is employed to construct comparison groups for estimating treatment effects of e-commerce adoption, addressing potential selection bias. The qualitative data are analyzed using thematic analysis to identify patterns, mechanisms, and contextual factors that explain quantitative findings.

## IV. RESULTS AND DISCUSSION

### 4.1. E-commerce adoption patterns

E-commerce adoption rates increased substantially over the study period, from 38% in 2019 to 71% in 2024. The COVID-19 pandemic marked a clear acceleration point, with adoption rates jumping from 42% in early 2020 to 64% by end of 2021. However, adoption intensity varied significantly across firms. While 71% of SMEs had some form of online presence by 2024, only 34% had fully integrated e-commerce operations with transactional, marketing, and operational capabilities.

Adoption patterns varied by firm characteristics and context. Medium-sized enterprises showed the highest adoption rates (82%) compared to small (68%) and micro enterprises (54%). Retail sector firms demonstrated higher adoption (78%) than manufacturing (65%) and services (62%). Country-level differences reflected infrastructure and ecosystem maturity, with Thailand (76%) and Vietnam (74%) showing highest adoption, while South Africa (58%) and Philippines (61%) lagged behind.

### 4.2. E-commerce impact on SME performance

Fixed-effects regression analysis reveals significant positive associations between e-commerce adoption and firm performance outcomes. E-commerce adopters experienced average revenue growth of 34% compared to 12% for non-adopters over the study period ( $\beta=0.22$ ,  $SE=0.04$ ,  $p<0.001$ ). Customer base expansion was 28% higher among adopters ( $\beta=0.18$ ,  $SE=0.03$ ,  $p<0.001$ ), and market reach, measured by geographic diversity of customers, increased by 45% ( $\beta=0.31$ ,  $SE=0.05$ ,  $p<0.001$ ).

However, profit margin effects were more modest and variable. While average profit margins improved by 8% among adopters, this effect was not statistically significant at conventional levels ( $\beta=0.06$ ,  $SE=0.05$ ,  $p=0.23$ ), reflecting increased costs associated with e-commerce operations including platform commissions, digital marketing expenses, and logistics costs. Propensity score matching analysis confirms these patterns, with average treatment effects closely aligned with regression estimates.

### 4.3. Challenges and barriers

The study identifies several significant challenges affecting SME e-commerce success. Digital skills gaps emerged as the most prevalent barrier, with 62% of SMEs reporting inadequate capabilities in digital marketing, data analytics, or technical operations. Case study evidence reveals that skills deficits lead to suboptimal platform utilization, ineffective marketing strategies, and missed opportunities for customer engagement.

Logistics infrastructure constraints affect 48% of SMEs, manifesting as high delivery costs, unreliable service quality, and limited geographic coverage. These challenges are particularly acute for SMEs in rural areas and smaller cities. Payment system integration difficulties impact 41% of firms, with issues including high transaction fees, limited payment options, and reconciliation complexities undermining operational efficiency.

Platform dependency concerns affect 38% of SMEs, with firms reporting vulnerability to platform policy changes, intense price competition, and margin erosion from commission structures. Qualitative evidence suggests that while platforms provide essential infrastructure for market access, over-reliance on single platforms creates strategic vulnerabilities that threaten long-term sustainability.

### 4.4. Moderating role of digital capabilities

The interaction analysis reveals that digital capabilities significantly moderate the relationship between e-commerce adoption and performance outcomes. SMEs with strong data analytics capabilities (top quartile) achieved 52% revenue growth compared to 18% for those with weak capabilities (bottom quartile). Similarly, firms with robust customer relationship management systems showed 2.3 times higher customer retention rates than those without such systems.

These findings highlight that e-commerce adoption alone is insufficient for performance improvement; complementary digital capabilities are essential for translating e-commerce presence into business outcomes. The case studies illuminate mechanisms through which capabilities matter, including better customer targeting, personalized marketing, inventory optimization, and data-driven decision making.

## V. CONCLUSION

This study provides comprehensive evidence on the role of e-commerce in SME growth across emerging markets,

revealing both significant opportunities and substantial challenges. The findings confirm that e-commerce adoption is associated with meaningful improvements in revenue growth, customer expansion, and market reach, supporting optimistic perspectives on digital transformation's potential for SME development. However, the research also demonstrates that these benefits are contingent on complementary capabilities and ecosystem conditions, explaining the heterogeneous outcomes observed across firms and contexts.

The identification of specific challenges-digital skills gaps, logistics constraints, payment integration difficulties, and platform dependency-provides actionable targets for intervention. The moderating role of digital capabilities suggests that SME support programs should prioritize capability development alongside technology adoption. Furthermore, the ecosystem factors influencing success highlight the importance of coordinated approaches involving platforms, financial institutions, logistics providers, and government agencies.

For practitioners and policymakers, these findings suggest several strategic priorities. SME managers should invest in building digital capabilities, diversify platform presence to reduce dependency, and actively engage with support services offered by platforms and government programs. Platform operators should enhance SME support services, including training programs, analytics tools, and fair commission structures. Policymakers should invest in digital infrastructure, promote digital skills development, and create regulatory frameworks that balance platform innovation with SME protection.

## REFERENCES

- Bai, C., Quayson, M., & Sarkis, J. (2021). COVID-19 pandemic digitization lessons for sustainable development of micro- and small-enterprises. *Sustainable Production and Consumption*, 27, 1989–2001.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120.
- Bharadwaj, A. S. (2000). A resource-based perspective on information technology capability and firm performance. *MIS Quarterly*, 24(1), 169–196.
- Bordonaba-Juste, V., Lucia-Palacios, L., & Polo-Redondo, Y. (2012). The influence of organizational factors on e-business use: Analysis of firm size. *Marketing Intelligence & Planning*, 30(2), 212–229.
- Brynjolfsson, E., & Hitt, L. M. (2003). Computing productivity: Firm-level evidence. *Review of Economics and Statistics*, 85(4), 793–808.
- Cusolito, A. P., Lederman, D., & Peña, J. (2020). *The effects of digital-technology adoption on productivity and factor demand: Firm-level evidence from developing countries* (World Bank Policy Research Working Paper No. 9333). World Bank.
- Cutolo, D., & Kenney, M. (2021). Platform-dependent entrepreneurs: Power asymmetries, risks, and strategies in the platform economy. *Academy of Management Perspectives*, 35(4), 584–605.
- Kapurubandara, M., & Lawson, R. (2006). Barriers to adopting ICT and e-commerce with SMEs in developing countries. In *Proceedings of the 2006 Collectors Workshop on E-commerce* (Vol. 9, pp. 1–5).
- Luo, X., Zhang, Y., Zeng, F., & Qu, Z. (2018). Digital platform capabilities and ecosystem development. *Journal of Business Research*, 100, 1–8.
- Manyika, J., Lund, S., Bughin, J., Woetzel, J., Stamenov, K., & Dhingra, D. (2016). *Digital globalization: The new era of global flows*. McKinsey Global Institute.
- OECD. (2021). *The digital transformation of SMEs*. OECD Studies on SMEs and Entrepreneurship.
- Parker, G. G., Van Alstyne, M. W., & Choudary, S. P. (2016). *Platform revolution: How networked markets are transforming the economy*. Norton & Company.
- Rietveld, J., & Eggers, J. P. (2018). Demand heterogeneity in platform markets: Implications for complementors. *Organization Science*, 29(2), 304–322.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509–533.
- UNCTAD. (2019). *Digital economy report 2019: Value creation and capture: Implications for developing countries*. United Nations.
- UNCTAD. (2021). *COVID-19 and e-commerce: A global review*. United Nations.
- World Bank. (2020). *Small and medium enterprises (SMEs) finance*. World Bank Group.
- Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: A review, model and research agenda. *Journal of Management Studies*, 43(4), 917–955.