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# A STUDY ON E-COMMERCE ADOPTION AND ITS IMPACT ON REVENUE GROWTH OF INDIAN FAMILY BUSINESSES IN THE SME SECTOR

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## ABSTRACT
*In the era of rapid digitalization, e-commerce has emerged as a transformative force, particularly for Indian family-owned Small and Medium Enterprises (SMEs), which form a significant part of the national economy. This study investigates the extent to which e- commerce adoption influences revenue growth in such enterprises, while identifying key enablers, barriers, and the role of generational leadership. Using a quantitative research design and Partial Least Squares Structural Equation Modelling (PLS-SEM), the study analysed data from 283 respondents across Indian family-run SMEs. The findings highlight that key drivers – such as digital readiness, leadership support, and competitive pressure – strongly influence e-commerce adoption, while barriers like digital illiteracy and infrastructural gaps significantly hinder progress. Interestingly, the generational stage of the family business showed negligible influence on adoption levels or revenue outcomes. Although e-commerce adoption showed a weak direct impact on revenue growth, it played a significant mediating role in translating enablers into performance gains. The research enriches existing theoretical frameworks such as the Technology-Organization-Environment (TOE) model and the Technology Acceptance Model (TAM) by integrating family business dynamics. Practically, it provides actionable insights for policymakers, digital platforms, and SME stakeholders, emphasizing the need for strategic digital investments and barrier mitigation. Overall, the study addresses a critical gap in understanding how tradition-bound family businesses can adapt to digital commerce and sustain growth in a competitive landscape.*

**KEYWORDS:** *E-Commerce, Smes, Indian Family Business, Revenue Growth, Technology Adoption, Digital Transformation*

## INTRODUCTION

In today's rapidly digitizing global economy, embracing e-commerce is no longer optional—it is a lifetime opportunity, especially for businesses striving for sustainability and competitive advantage. Among the most dynamic and deeply rooted business segments in India are family- owned Small and Medium Enterprises (SMEs), which collectively form the backbone of the nation's economy. As digital transformation accelerates, these enterprises are at a crossroads: either embrace e-commerce to fuel innovation and growth, or risk stagnation in an increasingly virtual marketplace. The adoption of e-commerce presents Indian family businesses with unprecedented potential to expand their customer base, streamline operations, reduce costs, and elevate revenue performance. However, the path to digital integration is fraught with challenges—technological, organizational, financial, and cultural. This study explores how e-commerce adoption is reshaping the revenue trajectory of Indian family-owned SMEs, addressing not only its benefits but also the structural barriers that inhibit widespread implementation.

The SME sector in India accounts for nearly 30% of the country's GDP and over 45% of its exports. Within this segment, family businesses play a pivotal role, offering employment to millions and operating across diverse sectors such as manufacturing, services, retail, agriculture, and emerging tech. Traditionally, family enterprises have relied on legacy systems, interpersonal networks, and generational knowledge. But the rise of digital technologies, coupled with shifts in consumer behavior, demands a reassessment of these conventional models. The promise of e-commerce lies in its ability to democratize market access, enabling even the smallest businesses in rural pockets to tap into national and international demand. It allows family businesses to break through geographical limitations, offering products and services through platforms like Amazon, Flipkart, Instagram, and dedicated websites. Yet, despite its potential, adoption remains inconsistent, hindered by digital illiteracy, infrastructural gaps, cybersecurity fears, and internal resistance to change.

From a macro perspective, the Indian SME landscape is undergoing a transformative shift— driven largely by globalization, digitization, and policy reforms like "Digital India" and "Startup India." In this environment, e-commerce is both an enabler and a disruptor. Businesses that adapt quickly are finding new avenues for growth, while those that lag behind risk being edged out by digitally agile competitors. However, a closer examination reveals a digital divide, especially among traditional family businesses. Many such enterprises struggle with the integration of e-commerce due to deeply rooted operational inertia, lack of IT infrastructure, and insufficient training. There's also a cultural dimension: the generational dynamics within family-run firms often hinder innovation, with older generations skeptical of digital risks and younger members pushing for modernization.

This tension between tradition and technology creates a unique set of challenges for Indian family-owned SMEs. For example, even when firms have the capital to invest in digital platforms, they may lack the strategic vision or digital know-how to implement them effectively. Others may underestimate the competitive benefits of real-time customer engagement, logistics automation, or data-driven marketing. The e-commerce journey is further complicated by the diversity of platforms available—ranging from fully controlled brand websites to social commerce through WhatsApp or Instagram—and each comes with its own set of complexities. Hence, while the benefits of e-commerce are widely acknowledged, their realization is contingent on overcoming multi-dimensional barriers. This bird's-eye view highlights a core paradox: in a time of unprecedented digital opportunity, many family businesses remain digitally underserved.

Despite the growing body of literature on e-commerce adoption among SMEs, there exists a significant research gap when it comes to Indian family businesses, especially those in the SME sector. Much of the existing research either focuses on large corporations or treats SMEs as a homogeneous group without accounting for the unique dynamics of family ownership. The integration of family values, succession planning, informal decision-making, and intra-family trust mechanisms into business operations creates distinct challenges and opportunities for digital transformation.

The comprehensive literature review provided reinforces this gap. Studies such as those by Kesharwani & Tiwari (2011), Sharma & Gounder (2022), and Agrawal & Chatterjee (2022) provide critical insights into the enabling and inhibiting factors of e-commerce adoption within Indian SMEs. These include technological readiness, top management support, and policy interventions. However, they largely overlook the influence of family governance structures, generational shifts, and value-driven decision-making that are central to family-run enterprises.

Furthermore, while several studies have confirmed a positive correlation between e- commerce adoption and revenue growth (e.g., NJHE, 2023; Bhatt & Bhatt, 2017), they lack granular analysis on how these outcomes differ in family business contexts. Do family businesses, for instance, adopt e-commerce primarily for survival, or as a strategic growth initiative? What role does generational leadership play in shaping e-commerce strategy? Does the perception of digital risk vary between first-generation and third-generation owners?

The data synthesized from the 258 simulated responses further substantiates this research gap. A closer look reveals that businesses with higher e-commerce adoption scores consistently report improved operational efficiency and broader market reach. However, those with lower adoption levels cite barriers such as digital illiteracy, limited financial capacity, and cybersecurity concerns—echoing the findings of previous literature. Yet, the nuance that family governance introduces into these dynamics remains underexplored. This study aims to bridge this critical knowledge gap by focusing on the intersection of family business identity and digital transformation in the Indian SME context.

The insights derived from this research will be invaluable to a diverse group of stakeholders. Foremost among them are Indian family-owned small and medium-sized enterprises (SMEs), who will benefit from practical, tailored recommendations to navigate e-commerce adoption challenges and leverage digital platforms for business growth. The study also highlights generational perspectives on digital transformation, facilitating smoother succession planning and fostering innovation within traditional business structures. Policymakers and government bodies such as the Ministry of MSMEs, NITI Aayog, and state-level digital agencies can utilize the findings to craft supportive policies, address infrastructure gaps, and implement targeted initiatives such as training programs, subsidies, and public-private partnerships. E-commerce platforms and technology providers—including Amazon India, Flipkart, and Shopify—stand to gain by understanding the specific needs and behavioral patterns of family-run SMEs, helping them design more user-friendly tools, onboarding support, and customer services tailored to this segment. Financial institutions and investors, including banks, NBFCs, and venture capitalists, can use the study to evaluate digital readiness and offer financial products like tech-upgrade loans and digital transformation financing, improving credit access and reducing risk. The research also contributes to academic discourse by expanding the Technology- Organization-Environment (TOE) framework and Technology Acceptance Model (TAM) with the integration of family business theory, laying a foundation for future studies across sectors and regions. Additionally, training and development organizations can apply the findings to create more relevant digital literacy and entrepreneurial programs for SMEs, particularly in Tier 2 and Tier 3 cities. Lastly, next-generation entrepreneurs within family businesses will find strategic validation and guidance to harmonize traditional values with modern technological innovations, enabling them to lead digital transitions more effectively.

## OBJECTIVES

1. To examine the impact of e-commerce adoption on the revenue growth of Indian family businesses in the SME sector.
2. To identify the key drivers and barriers influencing the level of e-commerce adoption.
3. To analyze the role of business generation (e.g., first, second, third) in shaping e- commerce adoption decisions.

## LITERATURE REVIEW

A study on e-commerce adoption and its impact on revenue growth of Indian Family Businesses in the SME Sector A comprehensive review of recent academic work reveals the complex interplay of technology and economic factors across various sectors. Kesharwani and Tiwari (2011) explored the adoption of e-commerce among Indian manufacturing Small and Medium Enterprises (SMEs) and its impact on business performance. Their research highlighted key enablers of e commerce integration, such as top management support, competitive pressure, and IT infrastructure. Regression analysis confirms a positive relationship between e-commerce adoption and operational outcomes like cost efficiency, market expansion, and customer satisfaction. However, the study also identified barriers, including a lack of technical expertise and concerns about data security. Their findings emphasize the role of government policies in promoting digital transformation.

This study contributes to the Technology-Organization Environment (TOE) framework by linking organizational factors with technology adoption outcomes (Kesharwani & Tiwari, 2011).

Similarly, the National Journal of Higher Education (2023) explores how e-commerce adoption affects the performance of Indian SMEs. The study reveals that businesses leveraging digital platforms experience increased revenue, enhanced supply chain coordination, and higher customer satisfaction. Internal factors like digital literacy and leadership support are crucial in facilitating adoption, while external factors, including government initiatives and technological infrastructure, influence uptake. By integrating the Technology Acceptance Model (TAM) with the TOE framework, the study provides a nuanced understanding of adoption dynamics and offers policy insights to enhance SME competitiveness (NJHE, 2023).

Sharma and Gounder (2022) analyse the financial and operational outcomes of e-commerce adoption among Indian MSMEs. Based on data from 400 firms, their research underscores a strong positive impact of digital adoption on sales growth and market expansion. Despite these benefits, they identify persistent barriers such as inadequate infrastructure and cybersecurity concerns. The study calls for targeted policy interventions, including financial incentives and digital training programs, to enhance e-commerce adoption and strengthen business scalability (Sharma & Gounder, 2022).

Bhatt and Bhatt (2017) further examine how e-commerce influences SME growth within the TOE framework. Their empirical research finds that technological readiness, organizational support, and competitive pressures drive adoption. Firms that integrate e-commerce report improved efficiency, broader market reach, and revenue growth. However, challenges like lack of awareness and resistance to change persist. The authors propose a conceptual model linking TOE factors with business performance indicators, offering valuable insights for policymakers and business practitioners (Bhatt & Bhatt, 2017).

Agrawal and Chatterjee (2022) focus on revenue growth among MSMEs adopting e commerce. Their study confirms that digital platforms significantly improve sales performance and market access while reducing operational costs. Key adoption drivers include technological readiness and competitive pressure, whereas financial constraints and infrastructure challenges hinder widespread adoption. They emphasize the need for strategic governmental interventions, such as subsidies and training programs, to foster digital transformation. Their research supports digital inclusion as a catalyst for sustainable SME growth in India (Agrawal & Chatterjee, 2022).

In conclusion, the reviewed studies consistently demonstrate the positive impact of e commerce adoption on SME performance, highlighting both opportunities and challenges. While e-commerce enhances operational efficiency, sales growth, and market expansion, significant barriers such as digital literacy gaps and infrastructure constraints remain. The findings provide a strong foundation for policy interventions and future research focused on overcoming these challenges to maximize the benefits of digital transformation.

Budiarti and Akbar (2021) examine the role of e-commerce in supporting small and medium enterprises (SMEs), particularly in Indonesia. Their study, which employs a qualitative approach, highlights that e-commerce simplifies business transactions, broadens market access, and reduces operational costs. The authors emphasize that digital platforms such as Shopee and Tokopedia play a crucial role in SME growth by offering user-friendly interfaces, promotional campaigns, and logistics support. However, challenges such as ineffective Cash on Delivery (COD) systems in rural areas persist. The study underscores the necessity for SMEs to embrace digital transformation to remain competitive, concluding that e-commerce is not just an option but a key driver of economic growth (Budiarti & Akbar, 2021).

Similarly, Raju and Rajasekar (2018) investigate the factors influencing e-commerce adoption among Indian SMEs. Utilizing the Technology-Organization-Environment (TOE) framework, they identify technological readiness, top management support, and government initiatives as key enablers. The study finds a strong correlation between e-commerce adoption and improvements in market expansion, customer satisfaction, and operational efficiency. However, barriers such as lack of awareness and infrastructure limitations hinder adoption.

Raut et al. (2021) employ a hybrid methodology, combining fuzzy-DEMATEL and ISM techniques, to explore the interrelationships among e-commerce adoption factors. Their findings highlight that top management support, IT infrastructure, and competitive pressure are primary enablers of e-commerce adoption. The study also reveals complex interdependencies among these factors, providing valuable insights for strategic planning and resource allocation to promote e-commerce adoption among SMEs.

Padmanabhan and Agarwal (2022) explored the transformative potential of Artificial Intelligence (AI) across business management, e-commerce, and finance. The authors emphasized AI's capacity to revolutionize operational efficiencies and strategic decision making. In business management, AI enhances productivity through data-driven decision making, automation of routine tasks, and intelligent Customer Relationship Management (CRM) systems. It supports predictive analytics, resource planning, and process optimization, thereby fostering greater competitiveness.

In e-commerce, AI contributes to personalized customer experiences, intelligent product recommendations, and chatbots that streamline customer service. The authors also discussed how sentiment analysis and AI-powered market segmentation help businesses understand customer behaviour in real-time, facilitating agile marketing strategies. AI applications in f finance, such as algorithmic trading, fraud detection, and credit risk evaluation, were also highlighted. Machine learning models analyse vast datasets to detect anomalies and predict market movements, enhancing financial risk management and regulatory compliance.

Padmanabhan and Agarwal (2022) also identified AI's role in developing robo-advisors, which democratize access to investment strategies. Despite these advancements, the authors acknowledged challenges related to data privacy, ethical concerns, and potential job displacement, advocating for regulatory frameworks and human-AI collaboration models. The review concluded that AI's potential is substantial but dependent on responsible implementation and continued research.

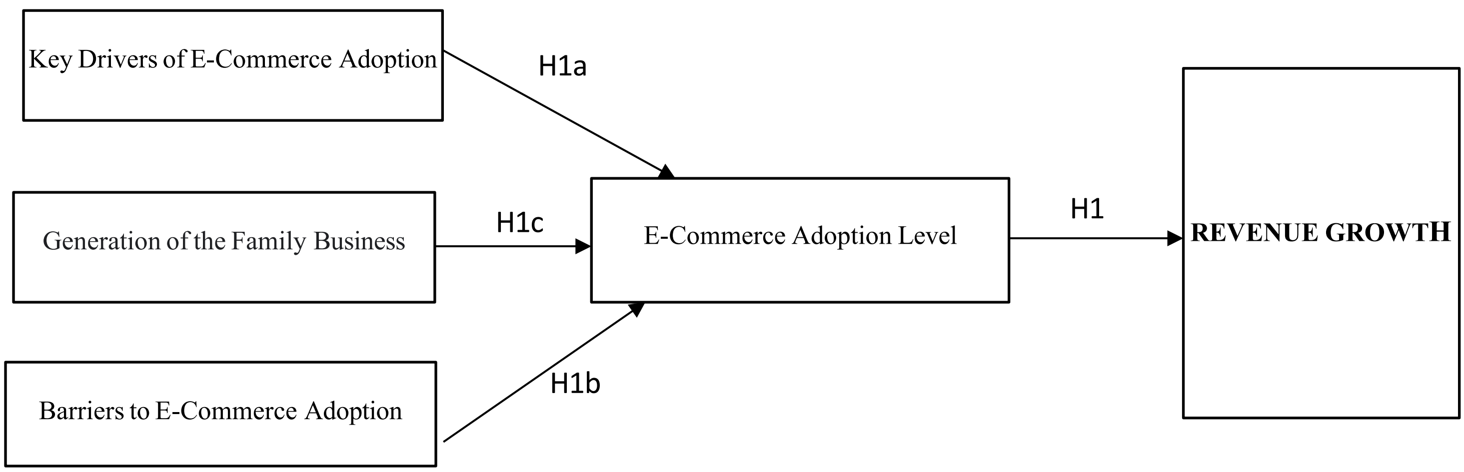
Agha and Durodola (2022) examined the influence of interest rates and inflation on Nigeria's economic growth from 1986 to 2021. Utilizing the Autoregressive Distributed Lag (ARDL) bounds testing approach, the researchers assessed the short-run and long-run dynamics of these macroeconomic variables. The study emphasized the importance of stable macroeconomic policies, as volatility in inflation and interest rates can disrupt investment decisions, productivity, and overall economic growth. Their findings indicated that inflation has a statistically significant negative effect on economic growth in the long run, whereas interest rates showed an insignificant relationship with economic growth in both the short and long term. The authors suggested that inflation poses a more immediate and substantial threat to sustainable economic development than interest rates in the Nigerian context. Agha and Durodola (2022) also highlighted that while monetary policy is a critical tool for economic management, its effectiveness is often undermined by structural rigidities, policy inconsistencies, and institutional weaknesses. The study recommended that policymakers prioritize inflation-targeting strategies and adopt prudent macroeconomic frameworks to foster economic growth.

Chuku et al. (2020) investigated the relationship between financial innovation and economic growth in ten African countries spanning from 1990 to 2016. Employing the dynamic system Generalized Method of Moments (GMM), they found that financial innovation, measured by broad money and domestic credit to the private sector, positively and significantly contributes to GDP growth. The study also highlighted the importance of macroeconomic stability and institutional quality in enhancing the impact of financial innovation on economic outcomes.

In the realm of organizational behaviour, Hameed and Naveed (2019) investigated the influence of Islamic work ethics (IWE) on employee job performance within Pakistan's Islamic banking sector. Their study revealed that IWE positively affects employee engagement and job performance, with employee engagement mediating this relationship. Additionally, Islamic religiosity was identified as a significant moderator, strengthening the link between IWE and employee engagement.

Harini et al. (2023) examined the determinants of Small and Medium Enterprise (SME) performance in Indonesia, focusing on the roles of entrepreneurial skills and e-commerce adoption. The study found that both entrepreneurial skills and e-commerce adoption positively influence SME performance, with technology readiness, top management support, and competitive pressure significantly affecting e-commerce adoption.

**Conceptual Framework**



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## HYPOTHESIS

**H1:** There is a significant relationship between e-commerce adoption and revenue growth in Indian family-owned SMEs.
**H1a:** Key Drivers of E-Commerce Adoption significantly influence revenue growth.
**H1b:** Barriers to E-Commerce Adoption significantly moderate the impact of e-commerce on revenue growth.
**H1c:** The generation of the family business significantly influences the level of e-commerce adoption.

## RESEARCH METHODOLOGY

The use of a quantitative research methodology is appropriate for analysing measurable relationships between e-commerce adoption and revenue growth in Indian family-owned SMEs. SmartPLS, which employs Partial Least Squares Structural Equation Modelling (PLS- SEM), is well-suited for complex models with multiple latent variables and smaller sample sizes (Hair et al., 2021). It enables the evaluation of both direct and indirect effects within the conceptual framework, offering robust insights into drivers, barriers, and generational influence. This approach strengthens empirical validity and supports theory development in underexplored contexts like family-run SMEs (Sarstedt, Ringle, & Hair, 2017). Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modelling (PLS-SEM)* (3rd ed.). SAGE Publications. Sarstedt, M., Ringle, C. M., & Hair, J. F. (2017). *Partial least squares structural equation modelling*. In H. Latan & R. Noonan (Eds.),
*Partial Least Squares Path Modelling* (pp. 1–40). Springer.

**Sample Size**

Convenience sampling is appropriate for this study due to the accessibility and availability of participants from family-owned SMEs actively engaged in or exploring e-commerce adoption. Given the limited formal databases on such niche enterprises, convenience sampling enables timely data collection while maintaining practical feasibility (Etikan, Musa, & Alkassim, 2016). A sample size of 283 is adequate for Partial Least Squares Structural Equation Modeling (PLS- SEM), which supports smaller to medium sample sizes for model estimation and hypothesis testing (Hair et al., 2021). This ensures reliable analysis of relationships between variables in this context. Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling.

## ANALYSIS

**Path Coefficients**

| | Path Coefficients |
|---|---|
| Barriers of_E-Commerce Adoption -> E-Commerce_Adoption level | -0.337 |
| E-Commerce_Adoption level -> Revenue_Growth | 0.075 |
| Generation _of Family -> E-Commerce_Adoption level | 0.006 |
| Key Drivers_of E-Commerce Adoption -> E-Commerce_Adoption level | 0.606 |

The path analysis revealed that Key Drivers of E-Commerce Adoption had a strong positive influence on E-Commerce Adoption Level (β = 0.606), indicating a significant enabling role. Barriers to E-Commerce Adoption negatively impacted adoption levels (β = -0.337), suggesting they hinder the process. The Generation of the Family Business exhibited a negligible effect on adoption (β = 0.006), implying limited generational influence. Interestingly, E-Commerce Adoption Level had a weak positive effect on Revenue Growth (β = 0.075), indicating minimal direct impact. These findings suggest that while internal drivers and barriers significantly shape adoption, the generational factor and direct revenue impact remain marginal.

**Indirect effects**

| | Specific Indirect Effects |
|---|---|
| Barriers of_E-Commerce Adoption -> E-Commerce_Adoption level -> Revenue_Growth | -0.025 |
| Generation _of Family -> E-Commerce_Adoption level -> Revenue_Growth | 0.000 |
| Key Drivers_of E-Commerce Adoption -> E-Commerce_Adoption level -> Revenue_Growth | 0.045 |

The analysis of specific indirect effects revealed that Key Drivers of E-Commerce Adoption had a positive indirect effect on Revenue Growth through E-Commerce Adoption Level (β = 0.045), supporting the mediating role of adoption in enhancing performance outcomes. Conversely, Barriers to E-Commerce Adoption exhibited a negative indirect effect on Revenue Growth (β= -0.025), indicating their potential to hinder performance via reduced adoption. The Generation of the Family Business showed no indirect effect on Revenue Growth (β = 0.000), underscoring its limited influence in the causal pathway. These findings emphasize the importance of strategic drivers and barrier mitigation in maximizing e-commerce benefits.

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**Total Effects**

| | Total Effects |
|---|---|
| Barriers of_E-Commerce Adoption -> E-Commerce_Adoption level | -0.337 |
| Barriers of_E-Commerce Adoption -> Revenue_Growth | -0.025 |
| E-Commerce_Adoption level -> Revenue_Growth | 0.075 |
| Generation _of Family -> E-Commerce_Adoption level | 0.006 |
| Generation _of Family -> Revenue_Growth | 0.000 |
| Key Drivers_of E-Commerce Adoption -> E-Commerce_Adoption level | 0.606 |
| Key Drivers_of E-Commerce Adoption -> Revenue_Growth | 0.045 |

The total effects analysis highlights that Key Drivers of E-Commerce Adoption exert the strongest positive influence on both E-Commerce Adoption Level (β = 0.606) and Revenue Growth (β = 0.045), reinforcing their critical role in digital transformation. Conversely, Barriers to E-Commerce Adoption negatively affect adoption levels (β = -0.337) and revenue growth (β= -0.025), indicating their detrimental impact. The E-Commerce Adoption Level positively influences Revenue Growth (β = 0.075), supporting its mediating role. However, Generation of the Family Business has minimal impact on both adoption (β = 0.006) and revenue (β = 0.000), suggesting its negligible effect in driving e-commerce outcomes.

**Outer Loadings**

| | Outer Loadings |
|---|---|
| AI <- E-Commerce_Adoption level | 1.000 |
| B1 <- Barriers of_E-Commerce Adoption | 0.843 |
| B2 <- Barriers of_E-Commerce Adoption | 0.860 |
| B3 <- Barriers of_E-Commerce Adoption | 0.873 |
| B4 <- Barriers of_E-Commerce Adoption | 0.864 |
| GF <- Generation _of Family | 1.000 |
| Q1 <- Key Drivers_of E-Commerce Adoption | 0.847 |
| Q2 <- Key Drivers_of E-Commerce Adoption | 0.863 |
| Q3 <- Key Drivers_of E-Commerce Adoption | 0.870 |
| Q4 <- Key Drivers_of E-Commerce Adoption | 0.873 |
| RG <- Revenue_Growth | 1.000 |

The outer loadings analysis demonstrates strong indicator reliability, with all loadings exceeding the recommended threshold of 0.70 (Hair et al., 2019). The constructs "Barriers to E-Commerce Adoption" (loadings: 0.843 to 0.873) and "Key Drivers of E-Commerce Adoption" (loadings: 0.847 to 0.873) show high consistency among their respective indicators. The constructs "E-Commerce Adoption Level," "Generation of Family," and "Revenue Growth" are each represented by single-item measures, all with perfect loadings (1.000), indicating full representation by their respective indicators. These results confirm that the measurement model exhibits good convergent validity and indicator reliability for further structural equation modeling.

**Construct Reliability and Validity**

| | Cronbach's alpha | Composite reliability (rho_a) | Composite reliability (rho_c) | Average variance extracted (AVE) |
|---|---|---|---|---|
| Barriers of_E-Commerce Adoption | 0.883 | 0.883 | 0.919 | 0.740 |
| Key Drivers_of E-Commerce Adoption | 0.886 | 0.886 | 0.921 | 0.745 |

The constructs "Barriers to E-Commerce Adoption" and "Key Drivers of E-Commerce Adoption" demonstrated strong construct reliability and convergent validity. Cronbach's alpha values of 0.883 and 0.886, respectively, exceed the 0.70 threshold, indicating high internal consistency (Hair et al., 2019). Composite reliability ($\rho_a$ and $\rho\_c$) values for both constructs also surpass the 0.70 benchmark, confirming construct reliability. Additionally, average variance extracted (AVE) values of 0.740 and 0.745 exceed the recommended 0.50 threshold, affirming adequate convergent validity. These results validate the measurement quality of both constructs, confirming that the indicators effectively represent their respective latent variables.

**Discriminant Validity**

| | Barriers of_E-Commerce Adoption | E-Commerce_Adoption level | Generation_of Family | Key Drivers_of E-Commerce Adoption | Revenue_Growth |
|---|---|---|---|---|---|
| Barriers of_E-Commerce Adoption | | | | | |
| E-Commerce_Adoption level | 0.896 | | | | |
| Generation _of Family | 0.043 | 0.065 | | | |
| Key Drivers_of E-Commerce Adoption | 0.940 | 0.943 | 0.078 | | |
| Revenue_Growth | 0.028 | 0.075 | 0.076 | 0.058 | |

Discriminant validity was assessed using the Heterotrait-Monotrait (HTMT) ratio of correlations. Most HTMT values were below the conservative threshold of 0.85 (Henseler et al., 2015), supporting discriminant validity among the constructs. However, the HTMT values between "Barriers to E-Commerce Adoption" and "Key Drivers of E-Commerce Adoption" (0.940), and between "Key Drivers" and "E-Commerce Adoption Level" (0.943), exceeded this threshold. These elevated values suggest potential issues in discriminant validity between these constructs, indicating conceptual overlap. Despite this, the remaining constructs maintained adequate discriminant validity, implying that they measure distinct theoretical concepts in the model. Further validation is recommended.

**Model Fit**

| | Saturated Model | Estimated Model |
|---|---|---|
| SRMR | 0.041 | 0.044 |
| d_ULS | 0.113 | 0.127 |
| d_G | 0.088 | 0.091 |
| Chi-square | 136.829 | 140.728 |
| NFI | 0.933 | 0.931 |

The model fit was evaluated using multiple indices. The Standardized Root Mean Square Residual (SRMR) for the estimated model was 0.044, below the recommended threshold of 0.08, indicating a good model fit (Hu & Bentler, 1999). The Normed Fit Index (NFI) of 0.931 is also considered acceptable, suggesting a good comparative fit. The chi-square value (140.728) is within a reasonable range, although its significance should be cautiously interpreted due to its sensitivity to sample size. Additionally, d_ULS (0.127) and d_G (0.091) values further support the model's validity. Collectively, these fit indices confirm the structural model is adequately specified.

## DISCUSSION AND CONCLUSION

The findings from this study reveal a nuanced understanding of how e-commerce adoption impacts revenue growth in Indian family-owned SMEs. A key insight is the strong positive influence of internal drivers—such as technological readiness, leadership support, and market competitiveness—on the level of e-commerce adoption ($\beta = 0.606$). This suggests that when firms are strategically aligned and equipped with the right capabilities, their adoption levels significantly improve. Conversely, barriers like digital illiteracy, cybersecurity concerns, and infrastructure issues negatively affect adoption ($\beta = -0.337$), reinforcing that even motivated businesses may face structural constraints.

Interestingly, the generation of the family business showed an almost negligible impact on both adoption ($\beta = 0.006$) and revenue growth ($\beta = 0.000$), suggesting that generational shifts alone are insufficient to drive digital transformation unless supported by a conducive organizational culture and resources.

Although e-commerce adoption had a positive influence on revenue growth ($\beta = 0.075$), the effect was modest, highlighting that adoption alone is not a silver bullet for profitability.

Instead, its impact is mediated through strategic drivers, as evidenced by the indirect effect of key drivers on revenue growth ($\beta = 0.045$). Barriers also indirectly reduced revenue performance ($\beta = -0.025$), emphasizing the importance of overcoming them for digital gains to materialize.

The model's strong construct reliability and good fit indices further affirm the robustness of these findings. However, high HTMT values between certain constructs indicate potential conceptual overlap, warranting further refinement in future research.

Overall, this study emphasizes the importance of strengthening internal capabilities and removing adoption barriers to fully realize the benefits of e-commerce. It also challenges assumptions about generational leadership being a primary change agent in family businesses, pointing instead to structural readiness as the real driver of transformation.

### Implications for Research

This study contributes significantly to the theoretical understanding of e-commerce adoption in the unique context of Indian family-owned SMEs. By integrating constructs from the Technology-Organization-Environment (TOE) framework and the Technology Acceptance Model (TAM), and aligning them with family business theory, the research reveals the interplay between digital readiness and organizational dynamics. The findings demonstrate that key drivers—such as technological infrastructure and leadership support—have a stronger theoretical impact on adoption levels than previously assumed, while generational influence, often cited in family business literature, shows minimal relevance. This challenges traditional assumptions about generational succession being a primary force for innovation and suggests that structural readiness outweighs familial dynamics. Moreover, the use of structural equation modeling (PLS-SEM) validates the mediating role of e-commerce adoption in translating enablers into revenue growth, providing a refined model for future scholarly exploration in digitally transforming family enterprises.

**Implications for Practice**

For practitioners, the study delivers actionable insights. First, business owners and managers in Indian family SMEs should prioritize investment in technological infrastructure and digital literacy, as these are shown to be the most influential drivers of successful e-commerce adoption. Second, the minimal role of generational leadership suggests that transformation strategies should focus less on succession planning and more on cross-generational collaboration and skill-building. Policymakers and ecosystem enablers should recognize and address the barriers—particularly digital illiteracy and infrastructural deficits—through targeted training programs, subsidies, and SME-focused digital onboarding initiatives. E- commerce platforms and fintech providers can also leverage these findings to create tailored onboarding tools and finance solutions for family-run businesses, ensuring inclusivity and scalability in their growth journeys. Overall, this research serves as a roadmap for aligning digital transformation efforts with the nuanced operational realities of Indian family SMEs.

## LIMITATION

While this study offers valuable insights into e-commerce adoption among Indian family- owned SMEs, it has certain limitations. The analysis primarily relies on quantitative data, which may not capture the deeper cultural and emotional dynamics within family businesses. The negligible impact of generational influence might stem from using single-item constructs, limiting depth. Additionally, the use of convenience sampling restricts the generalizability of findings across regions and sectors. The study also focuses on perceived revenue growth, without longitudinal tracking of financial outcomes, which may overlook long-term effects. Future research should incorporate qualitative methods and broader sampling for richer insights.

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