

# Digital Transformation of Small Businesses In Medan: A Quantitative Exploration of The Mediating Role of Partnerships in Enhancing E-Commerce Effectiveness

Digital  
Transformation of  
Small Businesses

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## ABSTRACT

*This study aims to explore the effect of digital transformation on increasing e-commerce effectiveness through the mediating role of partnerships in small businesses in Medan City. This research focuses on digitalization strategies that can strengthen the competitiveness of small businesses in the digital economy era. The originality of the research lies in the quantitative approach that examines the relationship between digital transformation, partnership, and e-commerce effectiveness, which has not been widely studied in the context of small businesses in Medan. The research gap identified is the lack of understanding on how partnership can mediate the impact of digital transformation on e-commerce effectiveness. The method used was a quantitative survey with SEM-PLS technique to analyze data collected from 200 small business owners in 21 sub-districts in Medan. The research findings show that digital transformation has a significant influence on partnerships, but does not directly have a significant effect on e-commerce effectiveness. In addition, partnership does not have a significant mediating role between digital transformation and e-commerce effectiveness. The conclusion of this study is that small businesses in Medan need a more integrated digital strategy and adequate infrastructure support to improve e-commerce effectiveness through stronger partnerships.*

**Keywords:** Digital Transformation, Small Business, Partnership, E-commerce Effectiveness.

## ABSTRAK

*Penelitian ini bertujuan untuk mengeksplorasi pengaruh transformasi digital terhadap peningkatan efektivitas e-commerce melalui peran mediasi kemitraan pada usaha kecil di Kota Medan. Penelitian ini berfokus pada strategi digitalisasi yang dapat memperkuat daya saing usaha kecil di era ekonomi digital. Orisinalitas penelitian ini terletak pada pendekatan kuantitatif yang mengkaji hubungan antara transformasi digital, kemitraan, dan efektivitas e-commerce, yang belum banyak diteliti dalam konteks usaha kecil di Medan. Kesenjangan penelitian yang teridentifikasi adalah kurangnya pemahaman tentang bagaimana kemitraan dapat memediasi dampak*

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*transformasi digital terhadap efektivitas e-commerce. Metode yang digunakan adalah survei kuantitatif dengan teknik SEM-PLS untuk menganalisis data yang dikumpulkan dari 200 pemilik usaha kecil di 21 kecamatan di Medan. Temuan penelitian menunjukkan bahwa transformasi digital memiliki pengaruh yang signifikan terhadap kemitraan, tetapi tidak secara langsung memiliki pengaruh yang signifikan terhadap efektivitas e-commerce. Selain itu, kemitraan tidak memiliki peran mediasi yang signifikan antara transformasi digital dan efektivitas e-commerce. Kesimpulan dari penelitian ini adalah bahwa usaha kecil di Medan membutuhkan strategi digital yang lebih terintegrasi dan dukungan infrastruktur yang memadai untuk meningkatkan efektivitas e-commerce melalui kemitraan yang lebih kuat.*

**Kata kunci:** *Transformasi Digital, Usaha Kecil, Kemitraan, Efektivitas E-commerce.*

## INTRODUCTION

The ever-evolving digital landscape presents great challenges for small businesses in today's era. While there are great economic opportunities in Medan City, the exploration of these opportunities, particularly in terms of strengthening small business networks, remains incomplete. Utilizing e-commerce platforms as collaborative instruments has the potential to unlock these untapped resources. In today's world, digitalization strategies are gradually gaining popularity and are considered essential for small businesses to grow and thrive in a highly competitive market. Medan City, as one of the largest cities in Indonesia, has a rich and diverse small business sector; however, it still faces challenges in adopting digital technology. The number of micro, small, and medium enterprises (MSMEs) in Medan City continues to increase year by year according to data from the Central Statistics Agency (BPS), reaching 595,779 units by 2022. Despite this reality, few businesses are taking advantage of the opportunities that e-commerce and digital platforms provide to expand their market coverage. Therefore, a digitalization strategy should be developed in the context of Medan City, which will facilitate coordination between small businesses and build their capabilities to improve competitiveness.

The small businesses in Medan City are facing several challenges that hinder their growth and competitiveness. Firstly, there are significant technology access issues, as many of these businesses struggle with limited provision of technology infrastructure. Additionally, a lack of digital skills among small business managers presents another barrier; most do not possess the necessary expertise to effectively manage their businesses on online platforms or leverage the benefits of advanced digital technologies, which are increasingly essential in today's market. Moreover, small players in the e-commerce space confront fierce competition from larger enterprises and established e-commerce platforms, making it difficult for them to gain a foothold. Lastly, the unavailability of data and analytics poses a significant challenge, as limited access to relevant data and analytical tools impedes their ability to understand market trends and consumer behavior, ultimately complicating the development of effective digital strategies.

The concept behind the digitalization strategy in Medan City stems from the realization that digitalization encompasses more than just the adoption of technology; it represents a fundamental change in the way businesses operate and collaborate. A successful digitalization strategy entails leveraging digital technologies across the business value chain, covering areas such as production, marketing, distribution, and customer service. However, when implementing this strategy for small businesses in Medan City, it is important to consider specific factors including existing infrastructure, skill level and availability of labour, population size, and consumer preferences. Introducing an innovative collaboration model: an innovative partnership model specifically designed to address the various challenges faced by small businesses in Medan. Using a dynamic evaluation methodology, the pilot project will employ a flexible and adaptable approach, allowing for real-time modification of strategies. The incorporation of cutting-edge technologies is crucial in this research, as it seeks to provide adaptive and sustainable solutions through the integration of digital advancements and e-commerce. However, the

main focus is not solely on digitalization but rather on capacity building and empowerment of small businesses.

While many small businesses in Medan are aware of the importance of digitalization, challenges in its implementation are still significant. One of the main challenges is limited access to adequate technology infrastructure, especially in less developed areas (Bangsawan, 2023; Supriatna et al., 2023). Cahyanti et al. (2021) highlighted that the lack of digital infrastructure is one of the biggest barriers to digital transformation in Indonesia, including in Medan. In addition, the lack of digital skills among small business owners is also a major barrier in effectively utilizing e-commerce technology. Digital skills are an important factor in determining the extent to which small businesses can utilize e-commerce platforms. Many small business owners in Medan do not have sufficient technical skills to maximize the potential of digital technology in managing their business. Research by Hendarsyah (2019) shows that the lack of digital skills in small business owners limits their effectiveness in using e-commerce. Therefore, training and developing digital skills are priorities to increase the effectiveness of e-commerce among small businesses. One indicator of e-commerce success is a high level of customer engagement. Digital transformation provides opportunities for small businesses to interact more closely with customers through various digital platforms. Research by Atmaja & Rahayu (2023) emphasized that more intense interaction with customers through e-commerce platforms can increase customer loyalty and retention. In Medan, successful small businesses in e-commerce are those that are able to build sustainable interactions with customers through effective digital marketing strategies. To explore and gain a comprehensive understanding of the barriers and benefits associated with the implementation of digitalization strategies in order to enhance small business networks in Medan City.

The proposed problem formulation focuses on the impact of digital transformation on small businesses in Medan City, particularly in the context of E-commerce. First, it seeks to understand how digital transformation enhances the effectiveness of E-commerce for these small enterprises. Additionally, the formulation explores the influence of digital transformation on partnerships formed by small businesses in the region. A critical aspect of this investigation is to examine the role of partnerships in boosting the effectiveness of E-commerce for small businesses. Finally, it aims to analyze how the interplay between digital transformation and partnerships contributes to the sustainability of small businesses in Medan. This comprehensive exploration will provide valuable insights into the dynamics of digital transformation and its implications for the growth and sustainability of small enterprises in the digital marketplace.

## **LITERATURE REVIEW**

Digital transformation has been key in transforming traditional business operations to be more efficient and integrated with technology. In the context of small businesses, digital transformation involves using technology to improve productivity and competitiveness (Hendrawan et al., 2024). Marpaung et al. (2023) assert that digital transformation can create innovation in small business models, improve market access, and optimize operations. However, implementing digital transformation in small businesses is often hampered by the lack of technological infrastructure and digital skills among business owners. In Medan, small businesses need a stronger strategy to integrate technology in every aspect of their operations. A study conducted by Kurniawati et al. (2021) showed that the COVID-19 pandemic accelerated the digital transformation of MSMEs in Indonesia, including Medan, but most small businesses still face major challenges in harnessing the potential of technology.

E-commerce has become one of the most important instruments for small businesses in reaching a wider and more geographically diverse market. E-commerce platforms allow small businesses to sell their products and services without physical restrictions. Deshinta & Suyanto (2020); Sinaga & Sitorus (2023), found that the effectiveness of e-commerce largely depends on the ability of small businesses to understand market trends and consumer behavior. In Medan, small business owners who utilize e-commerce platforms

experience increased sales and operational efficiency, but utilization is still limited. This study aims to explore how digital transformation can improve e-commerce effectiveness by facilitating better technology adaptation among small businesses.

Strategic partnerships are a critical component in supporting the digital transformation of small businesses. Through partnerships, small businesses can access additional resources, new technologies and knowledge that they did not have before. Komalasari et al. (2021), underline the importance of collaboration between small businesses and technology platforms in accelerating digitalization adoption. These partnerships help small businesses overcome limitations in terms of technology access and digital skills, which are often the main barriers to e-commerce adoption. In the context of Medan, strong partnerships with e-commerce platforms can encourage small businesses to adopt digital technologies faster and tap into wider market opportunities. Partnerships not only serve as access to technology and resources, but also as mediators that strengthen the link between digital transformation and e-commerce effectiveness. Ardito et al. (2018) explained that strong partnerships enable small businesses to more easily integrate technology into their business processes. In Medan, a good partnership between small businesses and e-commerce platforms can help small businesses maximize the potential of digital technology to improve their operational effectiveness. Digital transformation can be more effective when small businesses are able to work with parties that have relevant expertise and resources (Chen et al., 2021; Yigitbasioglu et al., 2023).

Digitalization not only affects operational effectiveness but can also drive overall small business growth. Marpaung et al. (2023) showed that small businesses that adopt effective digital strategies tend to experience increased revenue and market share. In Medan, digital transformation is key for small businesses to remain relevant and competitive in an increasingly digitized market. Increasing e-commerce effectiveness through digitalization and partnerships will enable small businesses in Medan to compete with larger and more established businesses nationally and internationally.

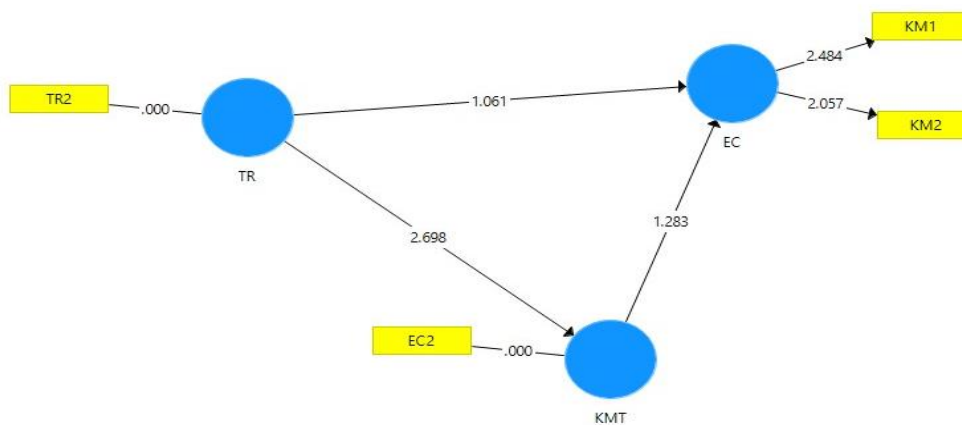
## **METHODS**

The researcher conducted field surveys, in-depth interviews, and secondary data analysis of literature on small businesses in the Medan City area by providing a contextual analysis of E-commerce Partnerships and Platforms among small business owners especially in the economic and social context of Medan city. This method allowed the researcher to gain a comprehensive understanding of the internal and external dynamics affecting small businesses' digital E-commerce Partnerships and Platforms. Tailored to the needs of small businesses in Medan, the solution was specifically designed to address the unique challenges and needs of the local market. By combining qualitative and quantitative approaches, a comprehensive and accurate analysis was obtained, providing valuable insights for decision-making (Sugiyono, 2018). The strategy was tested in a live pilot implementation, allowing for evaluation of effectiveness and providing tangible evidence. Small businesses are the focus, with a strong emphasis on developing practical solutions that can be implemented immediately. Cross-cutting quantitative qualitative fan survey design to collect data from small business actors in Medan on the Digitalization of Partnership Small Business Networks and E-commerce Platforms. Location Medan City as the location of this study there are 21: Sub-districts spread across Medan City. The population of this study, all SME Owners in Medan City. The sampling process was conducted in two stages. STAGE (1) Selection of Districts in all Small Businesses in Medan City, STAGE (2) Owing SMEs in all Small Businesses in Medan City. The sample size in this study was 200. Thus, 200 SMEs were drawn proportionally from 21 selected sub-districts. Data Collection by Survey and Interview and analysis tools using Descriptive Quantitative analysis and SEM-PLS Analysis.

## **RESULTS**

A loading factor value of 0.50 or more is considered to have strong enough validation to explain the latent construct (Hair et al., 2010). In this study, the initial outer loading

value on the Digital Transformation variable (X1), with the intervening variable Partnership (Z) and the endogenous variable E-Commerce Effectiveness, can be seen in Table 1. According to Yamin & Kurniawan (2011), indicators that have a loading factor value between 0.5 - 0.7 are acceptable. Table 1 shows that for the E-Commerce Effectiveness variable (EC), the EC2 indicator has a loading factor value of 1,000; for the Partnership variable (KMT), the KM1 indicator has a loading factor of 0.802 and KM2 0.696; while for the Digital Transformation variable (TR), the TR2 indicator has a loading factor value of 1,000. In this model, there are 3 indicators removed from the Digital Transformation variable, 3 indicators from the E-Commerce Effectiveness variable, and 3 indicators from the Partnership variable. All of the removed indicators have loading factor values below 0.60. After the removal of invalid indicators, the Average Variance Extracted (AVE) value is recalculated, and the model is updated to produce new outer loading values.



**Figure 1.** Final Path Diagram

The reliability instrument in this study was measured by two criteria, namely the composite reliability value and Cronbach's alpha. The use of Cronbach's alpha tends to underestimate variable reliability compared to composite reliability so it is recommended to use composite reliability (Nasri et al., 2024). According to Ghazali (2005), variables are said to be reliable if the composite reliability value is above 0.70 and the Average Variance Extracted (AVE) is above 0.50.

**Table 1.** Construct Reliability and Validity

Variable	Composite Reliability	Average Variance Extracted (AVE)
EC	0.720	0.563
KMT	1.000	1.000
TR	1.000	1.000

Table 1, it shows that all research variables have a composite reliability value above 0.70 and an Average Variance Extracted above 0.50. Therefore, the indicators used in this research variable are said to be reliable. Meanwhile, to test the validity using the average variance extracted (AVE) value with a limit value above 0.50. Table 1 shows that all variables have an AVE value above 0.50. This can be interpreted that all indicators and variables are declared valid. Structural model testing is carried out to see the relationship between constructs, the significance value and R square of the research model. The R-square value can be used to assess the effect of certain independent variables on the dependent variable.

**Table 2.** R-square value

Model	R Square	R Square Adjusted
EC	0.026	0.016
KMT	0.024	0.019

The R-Square Value for the E-Commerce Effectiveness Variable is 0.028 which can be interpreted that the magnitude of the influence of the E-Commerce Effectiveness Variable is 28% while other variables outside this study explain the rest. The R-Square value for the Partnership Variable is 0.024 which can be interpreted that the magnitude of the influence of the Partnership Variable is 24%% while other variables outside this study explain the rest. With an R-square value of 0.28 for the e-commerce effectiveness variable and 0.24 for partnerships, these results indicate that most of the variables affecting e-commerce effectiveness and partnerships lie outside this model. This is consistent with the findings by Wu et al. (2021), who pointed out that variables such as digital competence, product innovation and customer service often play a greater role in improving e-commerce effectiveness, especially in the context of small businesses. Whether or not a hypothesis is accepted, it is necessary to test the hypothesis using the Bootstrapping function in SmartPLS 3.0. The hypothesis is accepted when the significance level is smaller than 0.05 or the t-value exceeds the critical value (Hair et al, 2014). The t statistics value for the 5% significance level is 1.96.

Table 3. Path Coefficient Results

Model	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values
TR -> EC	0.097	0.117	0.082	1.180	0.240
TR -> KMT	0.154	0.150	0.062	2.498	0.013
KMT -> EC	0.114	0.105	0.094	1.221	0.224

From the path coefficient above, the original sample value, p value, or t statistics can be seen, which are used as a reference for making decisions on whether the hypothesis is accepted or rejected. The hypothesis can be accepted if the t statistics value > t table or p value < 0.05. Based on the test results in Table 4 above, it shows that. The first hypothesis is that Digital Transformation does not have a significant direct effect and on the effectiveness of increasing E-Commerce with a t value < 1.96, namely 1.180 and a p value > 0.05, namely 0.240. The original sample value is 0.097 which shows that the Digital Transformation variable has no direct effect on the effectiveness of increasing E-Commerce. Thus, the first hypothesis is rejected.

The second hypothesis is that the Digital Transformation variable has a direct and significant effect on partnerships with a t value > 1.96, namely 2.498 and a p value < 0.05, namely 0.013. The original sample value is 0.154 which indicates that the Digital Transformation variable has a direct effect on Partnerships. Thus, the second hypothesis is accepted. The third hypothesis, namely the Partnership Variable, does not have a significant direct effect on the Effectiveness of Increasing E-Commerce with a t value < 1.96, namely 1.221 and a p value > 0.05, namely 0.224. The original sample value is 0.114 which indicates that the direction of the Digital Transformation Variable does not have a significant effect on the effectiveness of increasing E-Commerce. Thus, the third hypothesis is rejected.

Table 4. Results of Specific Indirect Effects

Model	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values
TR -> KMT -> EC	0.018	0.015	0.017	1.041	0.299

The fourth hypothesis, namely indirect mediation between the Digital Transformation Variable on the Effectiveness of Increasing E-Commerce through Partnerships, has no effect and is significant with a t value < 1.96, namely 1.041 and a p value > 0.05, namely 0.945. The original sample value is 0.000 which indicates that the mediation of the Partnership variable on the Digital Transformation variable has an indirect and significant effect on the effectiveness of increasing E-Commerce Thus the fourth hypothesis is rejected.

## **DISCUSSION**

The test results show that Digital Transformation does not have a significant direct effect on e-commerce effectiveness with a t value of 1.180 and p of 0.240, which means that the first hypothesis is rejected. Nevertheless, this finding is in line with the research conducted by Bharadwaj et al. (2013), who found that the direct impact of digital transformation on business performance is often limited, unless the technology is integrated with a broader strategy. In the context of small businesses, digital transformation often does not immediately yield significant results due to limited resources and technology adoption capabilities. E-commerce performance may also be affected by other factors such as consumer trust and efficient logistics support (Chaffey et al., 2019). Digital transformation only acts as one component that requires synergy with other elements to achieve more optimal results. This is also supported by research from Verhoef et al. (2021), which emphasizes that the adoption of digital technology needs to be accompanied by innovation capabilities and effective business collaboration. Without a fundamental change in business models, digital transformation will not have a significant impact on increasing the effectiveness of e-commerce, especially in small businesses that have limited capacity. Therefore, digital transformation should be seen as a long-term process that requires continuous development, not just a technology initiative (Gobble, 2018; Vial, 2019; Albukhitan, 2020). This research shows that to achieve significant impact, small businesses in Medan need to increase their capacity in utilizing digital technology in a more integrated manner.

The second hypothesis, which states that Digital Transformation has a positive and significant effect on Partnership, is accepted with a t-value of 2.498 and p of 0.013. This finding suggests that digital transformation plays an important role in strengthening partnership relationships, especially in the context of small businesses that often require external support to achieve operational efficiency (Nambisan et al., 2019; Hartatik et al., 2023). Digital transformation enables small businesses to access technologies that enhance collaboration and information exchange with their business partners. Research by Verhoef et al. (2021) supports these findings, where digital technologies such as collaborative platforms and customer relationship management tools can increase trust and commitment between partners. In addition, digital technologies enable greater transparency in transactions and communications, which in turn strengthens existing partnerships. This stronger collaboration allows small businesses to tap into the external resources they need to improve their competitiveness in the market (Bharadwaj et al., 2013). However, it should be noted that the success of these partnerships also largely depends on the extent to which digital technologies are adopted and used effectively by all parties involved (Vial, 2019). In Medan, although digital transformation has a positive impact on partnerships, other factors such as government regulations and adequate digital infrastructure are still a challenge. Thus, small businesses need to develop a comprehensive digital strategy to maximize the benefits of digital partnerships.

The third hypothesis shows that Partnership has no significant direct effect on E-Commerce Effectiveness with a t-value of 1.221 and p of 0.224. This finding suggests that while partnership is considered important in the context of business collaboration, it does not automatically improve e-commerce effectiveness in small businesses (Chaffey et al., 2020). This could be due to partners' unpreparedness to adapt to digital technology or lack of adequate infrastructure support. Research by Wang et al. (2020) also indicates that business partnerships require deeper synergies, which are not only limited to formal collaboration, but also include joint adaptation to technology and business process innovation. The effectiveness of e-commerce is more influenced by internal factors such as technical capabilities, operational efficiency, and product innovation (Wu et al., 2021). Therefore, in the context of small businesses in Medan, partnerships are not strong enough to be the main determinant of e-commerce success without strong synergy with the company's internal digital strategy. Partnerships based solely on formal relationships without adequate technological adaptation will fail to improve e-commerce effectiveness.

In this case, partnerships need to be complemented with a more holistic collaborative approach to produce more significant results.

The test results show that Partnership does not mediate the effect of Digital Transformation on E-Commerce Effectiveness with a t value of 1.041 and p of 0.299, which means the fourth hypothesis is rejected. This suggests that although digital transformation and partnerships are important, they do not work synergistically in improving e-commerce effectiveness in small businesses in Medan. Previous research by Hanelt et al. (2021), highlighted that in many cases, partnerships fail to act as significant mediators if they are not supported by an integrated digital strategy and organizational readiness to collaborate effectively. The failure of partnerships to mediate the impact of digital transformation can also be caused by differences in goals or expectations between business partners (Verhoef et al., 2021). In addition, without adequate infrastructure support and technological expertise on both sides, digital transformation will not succeed in improving e-commerce effectiveness. Partnerships that lack a strong technological foundation are likely to fail to generate significant benefits for all parties involved (Nambisan et al., 2019). In this case, small businesses in Medan may not be fully prepared to utilize the potential of digital partnerships in improving their e-commerce effectiveness.

## CONCLUSION

This study concludes that Digital Transformation has no significant effect directly on E-commerce Effectiveness. This result shows that small businesses in Medan still need a more integrated strategy to be able to optimally utilize digital technology in improving e-commerce effectiveness. However, Digital Transformation proved to have a significant effect on Partnership. Digital technology enables small businesses to strengthen partnering relationships by improving collaboration and transparency, although this does not automatically have a direct effect on e-commerce effectiveness. Partnership, although important, does not have a direct significant effect on E-commerce Effectiveness. Other factors, such as partners' readiness to adopt technology and infrastructure support, seem to determine e-commerce success more. Finally, the mediating role of Partnership between Digital Transformation and E-commerce Effectiveness is also insignificant. This suggests that partnership cannot yet be a decisive element in improving e-commerce effectiveness without being supported by digital readiness and a strong strategy. Overall, this study confirms that small businesses in Medan need to develop a more comprehensive strategy in integrating digital technology with other elements such as partnership and infrastructure support to achieve significant improvements in their e-commerce effectiveness.

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