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Digital Transformation and Open Innovation as Drivers of MSME Performance: Evidence from Beauty Salon MSMEs in Medan Kota District, Indonesia

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ABSTRACT

This study analyzes the influence of digital transformation and open innovation on the performance of beauty salon MSMEs in Medan Kota District, Indonesia. A quantitative approach was employed using a saturated sample of 62 actively operating beauty salons, with data collected through questionnaires and analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM). The results show that digital transformation has a significant positive effect on MSME performance (path coefficient = 0.312; t-statistic = 2.711; p-value = 0.007), while open innovation exerts a stronger influence (path coefficient = 0.482; t-statistic = 4.697; p-value = 0.000). The model explains 59.5% of the variance in MSME performance (R^2 = 0.595), indicating substantial explanatory power. These findings provide empirical evidence that technology adoption and external collaboration are critical drivers of competitiveness and sustainability in the beauty service sector. Practical recommendations include strengthening digital literacy, expanding the use of online booking and e-payment systems, and building collaborative networks with suppliers and professional communities to enhance service innovation and customer loyalty.

Keywords: Beauty Salon, Digital Transformation, Micro, Small, and Medium Enterprises (MSMEs), Open Innovation, Performance

INTRODUCTION

Information technology has changed the way organizations operate, interact with customers, and manage resources (Rezeki, 2025; Situmorang et al., 2024). According to the OECD SME and Entrepreneurship Papers: SME Digitalisation for Competitiveness – The 2025 D4SME Survey (OECD, 2025, pp.12-15) many MSMEs in developing countries still face barriers in adopting advanced digital tools such as AI, fintech, and cybersecurity, with adoption rates below 40% in several regions. Similarly, the World Bank Digital Progress and Trends Report 2025: Strengthening AI Foundations (Bank, 2025,pp. 33-36) highlights that digital adoption among MSMEs significantly improves productivity, with ICT-enabled SMEs contributing to faster growth in trade and services.

From a policy perspective, the World Economic Forum report Sustainability Meets Growth: A Roadmap for SMEs and Mid-Sized Manufacturers (Forum, 2025, p.7) emphasizes that SMEs, which account for 90% of businesses worldwide, can unlock

new market opportunities through digital transformation and sustainability-driven innovation. More specifically in the service sector, Statista's Beauty and Personal Care E-Commerce Worldwide (Statista, 2025) shows that approximately 45% of global beauty industry revenue is generated through digital channels, particularly online booking platforms and e-payment systems. The findings of these various international institutions show that digital transformation has become a strategic factor for the sustainability of MSMEs, including the beauty service sector which is increasingly dependent on digital technology (Situmorang, 2025).

Medan Kota District is an urban area with high economic activity, particularly in trade, services, and lifestyle businesses. The growing awareness of personal appearance has encouraged the development of beauty salons. However, many salon MSMEs still face challenges in business management, technology adoption, and service innovation. The following table presents the number of service businesses in Medan Kota District.

Table 1.
Number of Service Businesses in Medan Kota District

Type of Business	Number of Units
Message	3 Units
Barbers	30 Units
Beauty Salons	62 Unit
Bone Setter	1 Unit

Source: BPS, 2025 (Medan City in 2025 Figures)

According to data from the Central Statistics Agency (BPS) of Medan City, service businesses in Medan City District include 62 beauty salons. However, field pre-surveys indicate that many salons have closed due to low turnover and intense competition. Salon growth remains stagnant, while digital adoption is still limited, highlighting a gap between market potential and the ability of salon MSMEs to leverage digital transformation and open innovation (Sidik et al., 2025).

According to BPS Medan City (2025), Medan Kota District has 62 beauty salons, making it one of the dominant service businesses in the area. However, preliminary observations show that several salons have closed due to declining turnover and intense competition. A pre-survey conducted in July-August 2026 found that 11 salons had ceased operations in the previous two years, while 37% of active salons reported stagnant or declining revenue. Digital adoption and external collaboration also remain limited, indicating challenges in digital readiness, innovation, and business sustainability.
Business performance in beauty salon MSMEs is reflected not only in financial outcomes but also in customer satisfaction, service quality, and customer loyalty. Previous studies have shown that digital transformation positively affects MSME performance (Persada et al., 2025; Wahdi et al., 2024). However, the adoption of digital technologies in beauty salons remains limited, particularly in reservation systems, digital payments, and social media marketing. Low digital literacy and constrained investment resources further hinder effective technology utilization. The phenomenon of digital transformation in the beauty services industry is increasingly visible. In Indonesia, Instagram is used by more than 47% of adults as the main medium to search for salon recommendations and treatment trends (Statista, 2025). Meanwhile, TikTok Shop recorded 22.5% of global Gross Merchandise Value (GMV) in the category *Beauty & Personal Care*, with Indonesia as one of the largest markets (AfterShip, 2025).

Table 2.
Preliminary Survey Results: Digital Adoption in Beauty Salons

Digital Technology Use	**Number of Salons**	**Percentage of 62 Salons**

Online booking apps	15 salons	24%
QRIS / e-wallets	21 salons	34%
Social media marketing (Instagram/TikTok)	28 salons	45%
Customer database / CRM	12 salons	19%

Source: Field survey of 62 beauty salons in Medan Kota District, July–August 2026

While BPS data (2025) records 62 beauty salons in Medan Kota District, preliminary survey results conducted in July–August 2026 reveal that digital adoption remains limited. Only 24% of salons use online booking applications, 34% accept QRIS or e-wallet payments, and 45% actively market services via Instagram or TikTok. Meanwhile, fewer than 20% maintain customer databases or CRM systems. These figures demonstrate that despite the large market potential, most beauty salon MSMEs in Medan Kota lag behind in technology adoption, which directly constrains their competitiveness and service efficiency.

The adoption of digital reservation technology is also starting to grow. Studies show that the use of online booking apps can lower the rate *no-show* up to 15% (Bangsa, 2025). In terms of payments, the shift towards a cashless society is becoming more and more real: more than 60% of urban consumers use e-wallets (GoPay, OVO, Dana, ShopeePay), and QRIS is now accepted by more than 30 million World Bank MSMEs – Digital Progress Report (Bank, 2025). In contrast, the adoption of CRM (Customer Relationship Management) is still low, with less than 20% of salon MSMEs managing customer databases systematically (OECD, 2025). This gap indicates that although opportunities for digitalization are substantial, many beauty salon MSMEs in Medan Kota still lag in technology adoption. This confirms that digital transformation is not merely a normative concept but a key factor influencing MSME competitiveness in the Industry 4.0 era. Previous studies have also shown that digital transformation significantly improves MSME performance (Alyani et al., 2024; Melo et al., 2023).

In addition, open innovation remains a major challenge. Most salons operate independently with limited collaboration with beauty communities, suppliers, or training institutions. Weak business networks and restricted access to external knowledge reduce their ability to follow market trends and develop innovative services. Previous studies have shown that open innovation significantly contributes to improving MSME performance (Rumanti et al., 2023).

Table 3.
Preliminary Survey Results: Collaboration Practices of Beauty Salons

Collaboration Type	Number of Salons	Percentage of 62 Salons
Collaboration with product suppliers	9 salons	15%
Participation in beauty communities	5 salons	8%
Partnership with training institutions	3 salons	5%
Joint promotions with other salons	4 salons	6%
No external collaboration at all	41 salons	66%

Source: Field survey of 62 beauty salons in Medan Kota District, July–August 2026

Preliminary survey results conducted in July–August 2026 show that collaboration among beauty salons in Medan Kota remains very limited. Only 15% of salons reported collaboration with product suppliers, 8% participated in beauty communities, and fewer than 5% partnered with training institutions for staff development. Meanwhile, two-thirds of salons (66%) operate entirely independently without any external collaboration. This lack of networking and openness to external ideas highlights a major barrier to innovation, making it difficult for salons to adapt to market trends and strengthen competitiveness.

Table 4.
Results of Previous Research

Researcher & Year	Key Findings	Research Limitations	Current Research Position
(Persada et al., 2025)	Digital transformation has a significant effect on the performance of MSMEs in the trade sector	Focus only on internal technology aspects, without involving external collaboration.	This research combines digital transformation with open innovation simultaneously, so that it is more comprehensive.
(Rumanti et al., 2023)	Open innovation increases organizational creativity in creative MSMEs.	The dominant effect on MSMEs with large resources is less relevant for small MSMEs.	This study examines open innovation in small MSMEs in the service sector (salon), so that it is more contextual.
(Melo et al., 2023)	Digital transformation is important for the sustainability of MSMEs globally.	Only based on literature reviews, there is no empirical test in the service sector.	This study provides empirical evidence on MSMEs of beauty salons in Medan Kota.

Source: Article Journal, 2023 – 2025

Despite the growing adoption of digital technologies, many beauty salon MSMEs in Medan City still face challenges in utilizing digital transformation and collaborative innovation to improve business performance. Limited digital capability, low technology adoption, and weak external collaboration indicate that the strategic potential of these capabilities has not been fully optimized.

This study extends Dynamic Capabilities Theory by integrating Digital Transformation and Open Innovation to explain MSME Performance in service-based MSMEs. It provides empirical evidence from beauty salon MSMEs in Medan City, a context that has received limited attention in previous studies. The findings are expected to offer practical recommendations for enhancing business performance and competitiveness through digital technology adoption and collaborative innovation. Accordingly, this study examines the effects of Digital Transformation and Open Innovation on MSME Performance among beauty salon MSMEs in Medan City.

LITERATURE REVIEW

MSME Performance

According to (Ermawati & Arumsari, 2021; Suharyono, 2020), MSME performance is a measure of the work performance of a business activity which can be seen through financial and non-financial aspects. MSME performance is a formal effort carried out by the company to evaluate the efficiency and effectiveness of the company's activities that have been carried out in a certain period of time (Firdhaus & Akbar, 2022; Maya & Husda, 2024). SMEs performance is a relevant construct in strategic management research and frequently used as a dependent variable (Mechman et al., 2022). Based on the understanding of the experts above, the performance of MSMEs can be concluded as a formal evaluation of efficiency, effectiveness, and revenue growth that reflects the success of the company's strategy and operations in a certain period.

The synthesis of the discussion of MSME performance shows that MSME performance reflects not only efficiency, effectiveness, and revenue growth, but also the ability to adapt to environmental changes. In the digital era, performance is increasingly influenced by digital transformation and open innovation, which enhance service quality, customer satisfaction, and business sustainability. Therefore, the performance of beauty

salon MSMEs in Medan Kota is viewed as an outcome of effective management supported by digital transformation and open innovation.

There are several indicators of MSME Performance according to (Ausat and Peirisal, 2021) which are as follows:
1. Sales growth
2. Market growth
3. Customer satisfaction
4. Profitability
5. Productivity

These indicators are widely used to measure MSME performance. In this study, performance was assessed through questionnaire responses from salon owners and managers; therefore, the construct represents perceived business performance rather than audited financial performance. For indicators such as sales growth and profitability, respondents evaluated changes in their businesses over the previous two years (2024–2026). This approach is consistent with prior MSME studies that rely on managerial perceptions as proxies for business performance.

Digital Transformation
Digital Transformation is extensively perceived as a driver of change in all contexts, most notably in the context of business, and influencing all aspects of human life based on the use of technologies (Kraus et al., 2021; Rezeki, 2025; Sampetoding et al., 2024). Digital transformation is a multidimensional process that involves a complete change in people, processes, technology, and data to create new business models and digital ecosystems (Rezeki et al., 2025; Tan et al., 2021). Based on the definition of digital transformation according to the experts above, the author can conclude that digital transformation is a comprehensive change process in the organization that involves the integration of digital technology into all aspects of business, from operations, management, to interaction with customers.

The literature synthesis on digital transformation emphasizes that digital transformation is a comprehensive change process through the integration of technology in operations, management, and customer interaction. Based on Dynamic Capabilities Theory (Teece, 2023), digital transformation is understood as a dynamic capability that allows MSMEs to adapt to changing environments. In the context of beauty salons, digital transformation is the main strategy to improve performance and competitiveness through technology adoption, business process integration, and data-driven customer interaction, resulting in the creation of new business models and a sustainable digital ecosystem.

There are several indicators of digital transformation according to (Gökalp & Martinez, 2021) which are as follows:
1. Digital Technology Adoption
2. Digital Capability
3. Digital Process Integration
4. Digital Customer Interaction
5. Digital Business Model

Open Innovation
Open innovation is a distributed, decentralized, and participatory way of innovating, where companies work together with external partners to accelerate value creation (Dahlander & Wallin, 2020). Open innovation can be seen as a new model of knowledge management that involves innovation processes characterized by openness towards the outside world, challenging the more conventional closed innovation model that has been

adopted by companies until now (Bigliardi & Filippelli, 2022). Open innovation is purposive inflows and outflows of knowledge to accelerate internal innovation and to expand the markets for external use of innovation (Heras-rosas & Herrera, 2021). Based on the definition of open innovation according to the experts above, the author can conclude that open innovation is an innovation approach that emphasizes openness to external ideas and collaboration with various partners, rather than just relying on internal resources.

Open innovation enables MSMEs to access external knowledge, strengthen collaborations, and adapt more effectively to market changes. Through these mechanisms, open innovation enhances competitiveness, service quality, and business sustainability. Therefore, this study positions open innovation as a strategic capability that directly contributes to MSME performance.

There are several indicators of open innovation according to (Papa et al., 2021) which are as follows:
1. Inbound knowledge
2. Outbound knowledge
3. Collaboration
4. External partnership
5. Knowledge sharing

Papa et al. (2021) focus on inbound open innovation, emphasizing the absorption of external knowledge. To capture the broader construct, this study also adopts indicators from more recent literature: collaboration and external partnerships (Bigliardi & Filippelli, 2022), and knowledge sharing (Heras-Rosas & Herrera, 2021). Thus, the measurement of open innovation in this study is synthesized from multiple sources published within the last five years, ensuring theoretical relevance and methodological consistency. Outbound knowledge flows, while central to Chesbrough's earlier framework, are excluded here due to the requirement of using only recent references.

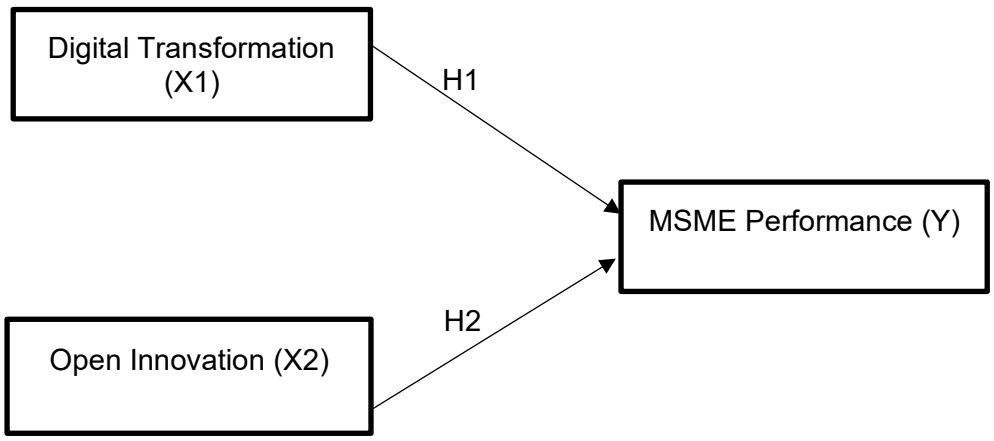


Figure 1. Theoretical Framework

The hypothesis in this study is:
H_1: There is an effect of Digital Transformation on MSME Performance
H_2: There is an influence of Open Innovation on the Performance of MSMEs

RESEARCH METHOD

This study was conducted in Medan Kota District from July to August 2026 using a quantitative approach. Data were collected through questionnaires distributed to beauty salon MSME owners or managers and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). PLS-SEM was selected because it is suitable for analyzing latent constructs measured by multiple reflective indicators and provides reliable estimation for small samples. With 62 respondents, the method enabled simultaneous assessment of the measurement model and structural relationships.

The recommended threshold for reflective indicator outer loadings is 0.708 (Hair et al., 2021). Most indicators in this study exceeded this value, indicating strong indicator reliability. Several indicators with loadings between 0.60 and 0.70 were retained because of their theoretical importance and their contribution to construct measurement. Their retention was justified as all constructs achieved AVE values above 0.50 and Composite Reliability (CR) values above 0.70, confirming adequate convergent validity and internal consistency. Therefore, these indicators were maintained to preserve the conceptual coverage of the constructs while meeting established PLS-SEM quality criteria. A loading of 0.50 should not automatically be considered sufficient for reflective indicators.

Thus, while indicators below 0.708 were not ideal, they were maintained because removing them would weaken the theoretical coverage of the constructs. Their inclusion is justified by the fact that the constructs as a whole met the criteria for convergent validity and reliability. This approach balances methodological rigor with theoretical completeness, ensuring that the measurement model reflects both statistical adequacy and conceptual relevance. This study employed saturated sampling, whereby all 62 beauty salon MSMEs in Medan Kota District were included as respondents (Sugiyono, 2022). Respondents comprised salon owners or managers actively involved in business operations. By covering the entire population, the study ensured comprehensive representation and enhanced the validity of the findings.

RESULTS

Table 5.
Convergent Validity Test

Code	Digital Transformation	Open Innovation	Performance
DT1	0.717		
DT2	0.639		
DT3	0.708		
DT4	0.714		
DT5	0.763		
DT6	0.626		
DT7	0.810		
DT8	0.832		
DT9	0.852		
DT10	0.728		
OI1		0.622	
OI2		0.764	
OI3		0.848	
OI4		0.707	
OI5		0.706	
OI6		0.804	

OI7	0.799	
OI8	0.798	
OI9	0.826	
OI10	0.816	
P1		0.778
P2		0.626
P3		0.747
P4		0.713
P5		0.868
P6		0.783
P7		0.836
P8		0.830
P9		0.797
P10		0.814

Source: Smart PLS, 2026

The convergent validity test showed that most indicators had loadings above the recommended threshold of 0.708. Several items with loadings between 0.60 and 0.70 were retained due to their theoretical relevance, and because the Average Variance Extracted (AVE) for each construct exceeded 0.50 and composite reliability (CR) values were above 0.70. These results confirm that the constructs of digital transformation, open innovation, and MSME performance achieved convergent validity and internal consistency.

Table 6.
HTMT Test

Code	Digital Transformation	Open Innovation	Performance
Digital Transformation			
Open Innovation	0.190		
Performance	0.601	0.637	

Source: Smart PLS, 2026

The results of the HTMT test showed that the entire value of the relationship between constructs was below 0.90. Thus, digital transformation, open innovation, and MSME performance have met discriminant validity because each construct has adequate empirical differences.

Table 7.
Reliability Test

Code	Cronbach's alpha	Rho_A	Composite reliability (rho_c)	Average variance extracted (AVE)
Digital Transformation	0.909	0.928	0.924	0.551
Open Innovation	0.924	0.933	0.936	0.596
Performance	0.928	0.932	0.940	0.612

Source: Smart PLS, 2026

All constructs exhibit satisfactory internal consistency. Cronbach's alpha values range from 0.909 to 0.928, while composite reliability values range from 0.924 to 0.940. All of these values exceed the recommended threshold of 0.70. In addition, AVE values range

from 0.551 to 0.612, exceeding the minimum threshold of 0.50. Thus, these three constructs meet the requirements for convergent reliability and validity.

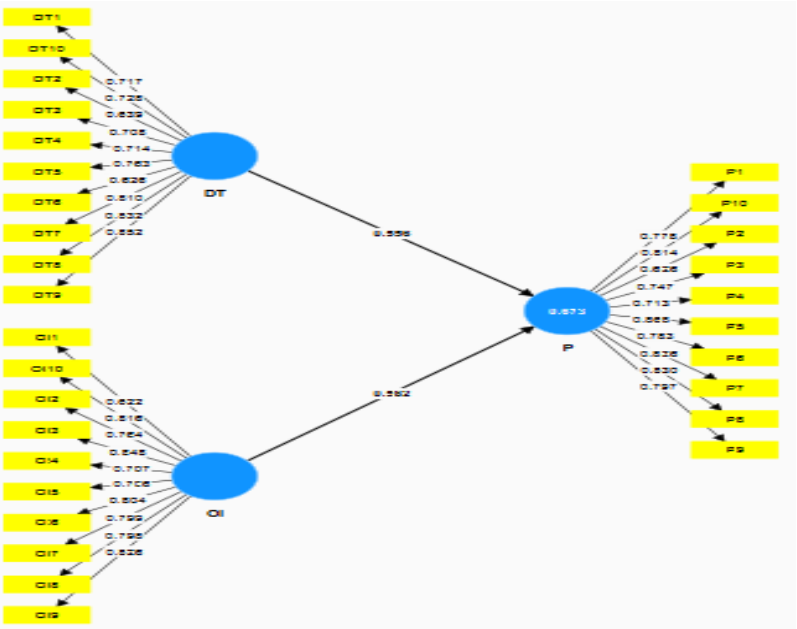


Figure 2. Overview Result

The explanation of the hypothesis test from figure 2 is as follows:

1. The digital transformation variable obtained a statistical t-value of 7.977 > 1.96 or a p value of 0.000 < 0.05, then H_1 was accepted, namely digital transformation affects the performance of MSMEs.
2. The open innovation variable obtained a statistical t-value of 9.838 > 1.96 or a p value of 0.000 < 0.05, then H_2 was accepted, namely information technology affects the performance of MSMEs.

Table 8.
Bootstrapping Test

Code	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	CI 2.5%	CI 97.5%
DT -> P	0.556	0.559	0.070	7.977	<0.001	0.418	0.689
OI -> P	0.582	0.581	0.059	9.838	<0.001	0.460	0.692

Source: Smart PLS, 2026

Explanation of the hypothesis test:

1. Digital transformation has a positive and significant influence on the performance of MSMEs (β = 0.556, t = 7.977, p < 0.001, CI 95% [0.418, 0.689]). So, H_1 is supported.
2. Open innovation has a positive and significant influence on the performance of MSMEs (β = 0.582, t = 9.838, p < 0.001, CI 95% [0.460, 0.692]). So, H_2 is supported.

The structural model shows no collinearity issues, as the VIF values for digital transformation and open innovation are 1.002, below the threshold of 5.00. Both variables have a large effect on MSME performance, with effect sizes of 0.945 and 1.035 respectively, indicating that open innovation contributes more strongly than digital transformation.

The R^2 value of 0.673 indicates that digital transformation and open innovation explain 67.3% of the variation in beauty salon MSME performance, while the adjusted R^2 value of 0.662 confirms the model's moderate explanatory power.

Path coefficient results reveal that digital transformation (β = 0.556) and open innovation (β = 0.582) both positively influence MSME performance, with open innovation showing a slightly stronger effect.

The Q^2predict value of 0.629, which is greater than zero, demonstrates that the model has predictive relevance for salon MSME performance. However, the predictive strength should be interpreted cautiously because the RMSE and MAE values were not compared with those of a linear benchmark model.

DISCUSSION

Digital transformation on the performance of the Medan Kota District salon

Digital transformation has a positive and significant effect on the performance of beauty salon MSMEs in Medan Kota District with a path coefficient of 0.556, t-statistic of 7.977, and p-value of < 0.001. An effect size value of 0.945 shows that digital transformation makes a large contribution to the performance of MSMEs. These results support (Persada et al., 2025), (Wahdi et al., 2024), and (Melo et al., 2023) which explains that the adoption of digital technology can improve the efficiency, adaptability, and performance of MSMEs.

From the Dynamic Capabilities Theory perspective, digital transformation enables salon MSMEs to respond to changing customer needs through online reservations, digital payments, and social media. However, its impact depends not only on technology adoption but also on digital literacy, process integration, and customer data management. Therefore, digital transformation should be viewed as an organizational capability rather than merely the use of digital tools.

Open innovation on the performance of the Medan Kota District salon

Open innovation has a positive and significant effect on the performance of beauty salon MSMEs with a path coefficient of 0.582, t-statistic of 9.838, and p-value < 0.001. An effect size value of 1,035 shows that open innovation makes a major contribution to the performance of MSMEs. These results support (Rumanti et al., 2023) who found that openness to external knowledge and collaboration can increase the creativity and performance of MSMEs.

In the perspective of Dynamic Capabilities Theory, collaboration with suppliers, the beauty community, customers, and training institutions allows salons to gain knowledge about trends, products, treatment techniques, and customer needs. This knowledge helps MSMEs capture market opportunities and adjust services faster. These findings explain why open innovation has a greater influence than digital transformation on salon MSMEs in Medan Kota District.

The clear power of the model for the performance of MSME salons in Medan City District

Digital transformation and open innovation together were able to explain 67.3% of the variation in the performance of beauty salon MSMEs, while the remaining 32.7% was explained by other factors outside the research model. The R^2 value of 0.673 indicates the clear power of the model in the moderate category. These findings show that improving the performance of salon MSMEs requires not only the ability to adopt

technology, but also the ability to acquire and utilize knowledge from external partners. In this model, open innovation has a more dominant influence than digital transformation. Therefore, digital strategies and external collaboration need to be developed in tandem, but should not be called a synergy effect because the study did not test the interaction between the two variables.

CONCLUSION

This study finds that digital transformation and open innovation significantly enhance the performance of beauty salon MSMEs in Medan Kota District. Digital capabilities improve operational efficiency, customer loyalty, and market reach, while external collaboration strengthens adaptability and service innovation.

The study extends Dynamic Capabilities Theory by demonstrating the role of technology adoption and collaborative innovation in improving service-based MSME performance, particularly in the beauty sector. However, this study is limited by the use of perceptual performance measures and a sample restricted to 62 salons in one district. Future studies should employ larger samples, longitudinal data, and objective performance indicators. Overall, the findings suggest that combining digital transformation with external collaboration can help beauty salon MSMEs improve competitiveness and achieve sustainable growth.

RECOMMENDATION

Beauty salon MSMEs in Medan Kota District should prioritize strengthening open innovation through collaboration with suppliers, professional communities, customers, training institutions, and digital partners to access market insights, improve skills, develop new services, and expand business networks. Digital transformation also needs to be enhanced through the adoption of online booking systems, digital payments, social media, and customer data management, supported by improved digital literacy and technology integration. Future studies may incorporate variables such as innovation capability, entrepreneurial orientation, digital competence, access to finance, and customer relationship management, while extending research to other service sectors and regions to increase generalizability.

REFERENCES

Aftership. (2025). TikTok shop statistics. *Aftership Insights.* Https://www.aftership.com/tiktok-shop-statistics

Alyani, I., Saptono, I. T., & Jahroh, S. (2024). Digital transformation drivers for Indonesian MSMEs. *Indonesian Interdisciplinary Journal of Sharia Economics,* 7(1), 423–441. Https://doi.org/10.31538/iijse.v7i1.4374

Ausat, A. M. A., & Peirisal, T. (2021). Determinants of e-commerce adoption on business performance: A study of MSMEs in Malang City, Indonesia. *Jurnal Optimasi Sistem Industri,* 20(2), 104–114. Https://doi.org/10.25077/josi.v20.n2.p104-114.2021

Bangsa, U. D. (2025). *Mobile Reservation Study. Repository Udb*. Http://repository.udb.ac.id/

Bank, W. (2025). *Digital Progress Report. Washington, Dc: World Bank.* Https://www.worldbank.org/en/topic/digitaldevelopment

Bigliardi, B., & Filippelli, S. (2022). Sustainability and open innovation: Main themes and research trajectories. *Sustainability,* 14(11), 6763.

Https://doi.org/10.3390/su14116763

Dahlander, L., & Wallin, M. (2020). Why now is the time for open innovation. *Harvard Business Review.* Https://hbr.org/2020/06/why-now-is-the-time-for-open-innovation

Ermawati, N., & Arumsari, N. R. (2021). Accounting information systems on the performance of small and medium enterprises. *Journal of Business and Accounting, 23*(1), 145–156. Https://doi.org/10.34208/jba.v23i1.973

Firdhaus, A., & Akbar, F. S. (2022). The effect of accounting information system implementation and information technology utilization on MSME performance. *Proaksi Journal, 9*(2), 173–187. Https://doi.org/10.32534/jpk.v9i2.2632

Forum, W. E. (2025). Shaping The Future Of Digital Economy. *Geneva: WEF.* Https://www.weforum.org/reports/shaping-the-future-of-digital-economy

Gökalp, E., & Martinez, V. (2021). Digital transformation maturity assessment: Development of the digital transformation capability maturity model. *International Journal of Production Research, 59*(21), 6528–6546. Https://doi.org/10.1080/00207543.2021.1991020

Heras-Rosas, C. De, & Herrera, J. (2021). Research trends in open innovation and the role of the university. *Journal of Open Innovation: Technology, Market, and Complexity, 7*(1), 29. Https://doi.org/10.3390/joitmc7010029

Kraus, S., Jones, P., Kailer, N., Weinmann, A., & Chaparro-Banegas, N. (2021). Digital transformation: An overview of the current state of the art of research. *SAGE Open, 11*(3), 21582440211047576. Https://doi.org/10.1177/21582440211047576

Maya, S., & Husda, A. P. (2024). The influence of e-commerce, accounting knowledge and accounting information systems on MSME performance. *Eco-Buss, 6*(3), 1178–1193. Https://doi.org/10.32877/eb.v6i3.1101

Mechman, A., Omar, S. S., Hamawandy, N. M., Abdullah, S. A., & Qader, A. N. (2022). The effect of digital marketing and e-commerce on SMEs performance of Baghdad. *Journal of Positive School Psychology, 6*(3), 4197–4212. Https://www.diva-portal.org/smash/get/diva2:1674436/fulltext02

Melo, I. C., Queiroz, G. A., Nocera, P., Junior, A., Sousa, T. B. De, Yushimito, W. F., & Pereira, J. (2023). Sustainable digital transformation in small and medium enterprises (SMEs): A review on performance. *Heliyon, 9*(3), e13908. Https://doi.org/10.1016/j.heliyon.2023.e13908

Oecd. (2025). Digital Transformation Of Smes. Oecd Publishing. Https://www.oecd.org/industry/smes

Oecd. (2025). Sme Digital Transformation. Oecd Digital Economy Papers. Https://www.oecd.org/digital/

Papa, A., Chierici, R., Ballestra, L. V., Meissner, D., & Orhan, M. A. (2021). Harvesting reflective knowledge exchange for inbound open innovation in complex collaborative networks: An empirical verification in Europe. *Journal of Knowledge Management, 25*(4), 669–692. Https://doi.org/10.1108/jkm-04-2020-0300

Persada, A. R., Mulyadi, H., Mahri, A. J. W., & Furqon, C. (2025). Digital transformation

and business incubation on SME performance in Indonesia. *Scientific Journal of Unit Management, 13*(4), 2183–2194. Https://doi.org/10.37641/jimkes.v13i4.3441

Rezeki, S. (2025a). Contribution of e-business success to achieving competitive advantage in MSMEs. *Scientific Journal of Unit Management, 13*(4), 2219–2232. Https://doi.org/10.37641/jimkes.v13i4.3468

Rezeki, S. (2025b). Technology usage strategy and distribution channel in increasing customer satisfaction from service offerings available in the marketplace (Go International). *Proceeding International Business and Economics Conference (IBEC), 4*(1), 153–166. Https://doi.org/10.47663/ibec.v4i1.318

Rezeki, S., Nainggolan, E., & Leonardi, N. (2025). Increasing consumer purchasing decisions: A look at the utilization of social media marketing and servicescape at Ming Kopi. *Ekombis Review, 13*(4), 4373–4388. Https://doi.org/10.37676/ekombis.v13i4.8291

Rumanti, A. A., Rizana, A. F., & Achmad, F. (2023). Exploring the role of organizational creativity and open innovation in enhancing SMEs performance. *Journal of Open Innovation: Technology, Market, and Complexity, 9*(2), 100045. Https://doi.org/10.1016/j.joitmc.2023.100045

Sampetoding, E. A. M., Uksi, R., & Pongtambing, Y. S. (2024). Digital transformation in accounting information systems in villages. *Journal of Accounting Innovation, 2*(1), 72–77. Https://doi.org/10.36733/jia.v2i1.9046

Sidik, Aisyah, S., Rahmat, T., & Syahrir, A. M. (2025). Analyzing the role of digital entrepreneurial mindset (DEM) in enhancing MSME competitiveness: A case study of Sanlash Beauty Salon. *Karismapro, 16*(1), 47–66. Https://doi.org/10.53675/karismapro.v16i01.1677

Situmorang, F. (2025). The effect of good corporate governance, internal control and competence of human resource on the prevention of fraud (Case study at PT Britania Akademi Indonesia). *Proceeding International Business and Economics Conference (IBEC), 4*(1), 748–761. Https://doi.org/10.6084/m9.figshare.26738451.v1.

Situmorang, F., Pane, Y., Tinggi, S., Ekonomi, I., & Prasetya, E. (2024). Internal company behavioral factors that influence financial fraud. *Journal of Accounting International Mount Hope Jaimo,* 57–66. Https://doi.org/10.6084/m9.figshare.26738452.v1.

Statista. (2025). Beauty & Personal Care Market Report. *Statista Research Department*. Https://www.statista.com/outlook/cmo/beauty-personal-care/worldwide

Sugiyono. (2022). *Quantitative, Qualitative, and R&D Research Methods (M. Dr. Ir. Sutopo. S.Pd (Ed.); 2nd Ed.).* Alphabet.

Suharyono. (2020). Business Performance Measurement for Micro, Small and Medium Enterprises (MSMEs). *National University Publishing Institute (Lpu-Unas).* Https://repository.unas.ac.id/id/eprint/3745/

Tan, C. H., Thayre, D., Plougastel, E., & Shmulevich, M. (2021). Digital transformation: What? How? Why? *Institutional Knowledge at Singapore Management University.* Https://ink.library.smu.edu.sg/pers/579/

Taufik, A. (2022). *Introduction to Information Technology (1st ed.).* CV. Pena Persada.

Teece, D. J. (2023). The evolution of the dynamic capabilities framework. In *Dynamic capabilities and strategic management* (pp. 133–150). *Springer.* Https://doi.org/10.1007/978-3-031-11371-0_6

Wahdi, H., Zainal, V. R., Suprapto, & Nurhayati, M. (2024). Influence of digital transformation, training, entrepreneurial knowledge on MSME performance after the pandemic. *Husnayain Business Review, 4*(2), 109–120. Https://doi.org/10.54099/hbr.v4i2.1093