

The Role of Digital Marketing in Enhancing MSME Competitiveness in the Digital Economy Era: A Study on MSMEs in West Sumatra

Sheny Vita*¹

Universitas Negeri Malang, Indonesia

*e-mail: shenyvita@gmail.com

Submit : July 12, 2025

Accepted: September 01, 2025

Revised : August 20, 2025

Published : September 30, 2025

Abstract

This study aims to analyze the role of digital marketing in enhancing the competitiveness of MSMEs in West Sumatra, focusing on aspects of sales improvement, market expansion, and customer loyalty. A quantitative approach was employed through a survey of 100 MSME actors in the culinary, handicraft, and tourism sectors who had used digital platforms for at least one year. Data were analyzed using multiple linear regression to examine the influence of digital marketing and customer loyalty on MSME competitiveness. The results show that digital marketing has a positive and significant effect on competitiveness ($\beta = 0.617$; $p < 0.001$), while customer loyalty also contributes positively, though to a lesser extent ($\beta = 0.283$; $p < 0.01$). Social media emerged as the dominant digital channel used (72%), while paid advertising and marketplaces were relatively less utilized. These findings indicate that digital marketing strategies can drive short-term sales growth; however, strengthening long-term competitiveness requires fostering customer loyalty through continuous interaction, after-sales service, and customer management system integration. The study recommends digital literacy training, assistance in integrating social media with e-commerce, and regional policy support to encourage MSMEs' transformation from organic strategies to more sustainable omnichannel strategies. This research contributes theoretically by reinforcing the literature on the mechanisms through which digital marketing and customer loyalty influence MSME competitiveness in the digital economy era.

Keywords: digital marketing, competitiveness, customer loyalty, MSMEs

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are the backbone of Indonesia's economy. Nationally, the MSME sector makes a significant contribution to the Gross Domestic Product (GDP) while also being the largest absorber of labor, making the strengthening of this sector key to promoting inclusive and sustainable economic growth (Kadin Indonesia, 2024). Beyond macroeconomic contributions, MSMEs also play a vital social role in creating new jobs, reducing unemployment, and maintaining household economic stability, particularly among lower-middle-class communities.

At the provincial level, including West Sumatra, MSMEs serve as one of the drivers of regional economic growth, with strong foundations in the culinary, handicraft, and tourism sectors. Flagship products such as packaged rendang, Pandai Sikek songket, and locally based handicrafts have strengthened cultural identity while also holding great potential in both domestic and international markets. However, MSMEs continue to face several persistent challenges, such as limited access to capital, distribution barriers, and low managerial capacity. A particularly crucial challenge is the adaptation to digital technological developments, which has now become a determinant of competitiveness (Andika et al., 2021).

Previous studies in West Sumatra emphasize that improving human resource (HR) quality and adopting modern marketing strategies are fundamental factors in ensuring business sustainability. For instance, in the packaged rendang industry, strengthening promotion and distribution capabilities through technology has become essential to facing increasingly fierce competition (Rahmat et al., 2022). The shift in consumer behavior toward becoming more

digitally savvy further accelerates the need for MSMEs to adopt technology-based marketing strategies.

The digital economy offers strategic opportunities. The use of digital marketing through social media, marketplaces, and digital advertising has been proven to improve sales performance, expand market reach, and build more intensive customer engagement (Abdullah, 2025; Kilay et al., 2022). Various studies highlight that digital marketing not only enhances promotional cost efficiency but also enables MSMEs to build strong brand images and compete more equally with larger companies (Sandiva, 2024).

However, these opportunities are often hindered by tangible challenges. Barriers such as uneven digital literacy, limited human resources capable of managing digital platforms, and weak data-driven analytical capabilities mean that digital marketing strategies are not yet fully optimized (Wibawa et al., 2024). In addition, the role of support from local governments and related institutions remains crucial to ensure that the MSME digital transformation process is well-directed and sustainable (Wulandari et al., 2025).

Based on this background, this study aims to analyze the role of digital marketing in enhancing the competitiveness of MSMEs in West Sumatra, focusing on aspects of sales improvement, market expansion, and customer loyalty. The findings are expected to provide practical contributions for MSME actors, local governments, and other stakeholders, particularly in formulating strategies to accelerate MSME digitalization in ways that are relevant to local characteristics and regional challenges.

METHOD

This study employed a quantitative approach using a survey method. The choice of this approach was based on the research objective, which sought to test the relationship between the application of digital marketing and the improvement of MSME competitiveness in West Sumatra.

Population and Sample

The population of this study consisted of all MSME actors in West Sumatra operating in the culinary, handicraft, and tourism sectors. A purposive sampling technique was used to select respondents based on specific criteria, namely MSMEs that had been using digital platforms (social media, e-commerce, or digital advertising) for at least one year. The sample size was set at 100 MSMEs, which was deemed sufficient for basic statistical analysis.

Research Instrument

Data collection was conducted using a Likert scale questionnaire (1–5), covering three main variables:

1. Digital Marketing (indicators: use of social media, e-commerce, digital advertising, and content strategy),
2. MSME Competitiveness (indicators: sales improvement, market expansion, cost efficiency, and product differentiation),
3. Customer Loyalty (indicators: repeat purchases, recommendations, and consumer engagement).

Data Collection Techniques

Primary data were obtained through questionnaires distributed directly or via digital platforms to respondents. Secondary data were sourced from government reports, academic publications, and articles related to digital marketing and MSMEs in West Sumatra.

Data Analysis Techniques

Data were analyzed using descriptive statistical methods to describe respondent and variable characteristics, as well as multiple linear regression analysis to test the effect of digital marketing on MSME competitiveness. Validity and reliability tests were conducted beforehand to ensure the quality of the research instrument.

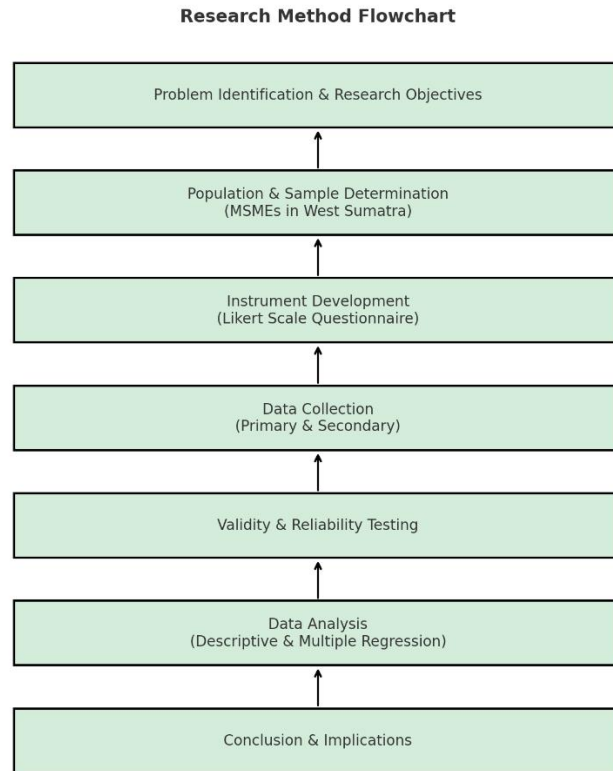


Figure 1. Research Flowchart

RESULT AND DISCUSSION

Result

Research Instrument Test

Table 1. Respondent Characteristics

Characteristic	Category	Number (n)	Percentage (%)
Business Sector	Culinary	45	45.0
	Crafts	35	35.0
	Tourism	20	20.0
Length of Business	1-5 years	40	40.0
	> 5 years	60	60.0
Primary Digital Platform	Social Media	72	72.0
	Marketplace	18	18.0
	Social Media + Digital Ads	10	10.0
Total Respondents		100	100.0

The majority of respondents come from the culinary sector (45%), followed by crafts (35%) and tourism (20%). Most of the UMKM have been in business for more than 5 years (60%), indicating relatively mature business experience. In terms of technology utilization, social media is the most dominant digital platform used (72%), while marketplaces (18%) and a combination of social media with digital ads (10%) are less utilized

Table 2. Validity Test Results

Variable	Statement Item	Item-Total Correlation	Criteria	Status
Digital Marketing	DM1	0.612	> 0.30	Valid
	DM2	0.587	> 0.30	Valid
	DM3	0.674	> 0.30	Valid
UMKM Competitiveness	DS1	0.721	> 0.30	Valid
	DS2	0.695	> 0.30	Valid
Customer Loyalty	LP1	0.643	> 0.30	Valid
	LP2	0.659	> 0.30	Valid

The validity test results show that all statement items for the Digital Marketing (DM1–DM3), UMKM Competitiveness (DS1–DS2), and Customer Loyalty (LP1–LP2) variables have item-total correlations greater than 0.30. This means that all the indicators used in the study are valid and suitable for measuring each of the variables. Therefore, the research instrument accurately represents the constructs being studied.

Table 3. Reliability Test Results

Variable	Cronbach's Alpha	Minimum Limit	Status
Digital Marketing	0.812	≥ 0.70	Reliable
UMKM Competitiveness	0.835	≥ 0.70	Reliable
Customer Loyalty	0.796	≥ 0.70	Reliable

The reliability test results show that all research variables have Cronbach's Alpha values above 0.70: Digital Marketing (0.812), UMKM Competitiveness (0.835), and Customer Loyalty (0.796). This indicates that the research instruments are reliable, meaning the measurements are consistent and trustworthy for assessing the constructs being studied.

Descriptive Statistics

Table 4. Descriptive Statistics of Research Variables

Variable	Mean	Highest Indicator	Lowest Indicator
Digital Marketing	4.12	Social Media Usage (4.35)	Digital Ads (3.85)
UMKM Competitiveness	4.05	Sales Growth (4.20)	Cost Efficiency (3.90)
Customer Loyalty	3.98	Repeat Purchases (4.15)	Recommendations (3.80)

The descriptive results show that the Digital Marketing variable has a mean of 4.12, with social media usage as the highest indicator (4.35) and digital ads as the lowest (3.85). The UMKM Competitiveness variable has a mean of 4.05, with sales growth as the highest indicator (4.20) and cost efficiency as the lowest (3.90). Meanwhile, the Customer Loyalty variable has a mean of 3.98, with repeat purchases as the highest indicator (4.15) and recommendations as the lowest (3.80). These findings suggest that UMKM make the most use of social media, see sales growth as the

main outcome, and customers are more likely to make repeat purchases rather than recommend the products

Multiple Linear Regression Test

Table 5. Model Summary

Model	R	R Square	Adjusted R Square
1	0,761	0,579	0,567

Table 6. ANOVA Test Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	28,512	2	14,256	66,73	0,000
Residual	20,603	97	0,212		
Total	49,115	99			

Table 7. t-test Results

Variabel	B	Std. Error	Beta Standar	t
(Constant)	0,452	0,154	-	2,94
Digital Marketing (X1)	0,617	0,081	0,61	7,62
Customer Loyalty (X2)	0,283	0,095	0,23	2,98

Table 8. Regression Coefficients (Unstandardized & Standardized)

Predictor	B (Unstandardized.)	SE B	t	p	Beta (stand.)	95% CI B (lower, upper)
(Constant)	0.452	0.154	2.94	0.004	-	0.145 - 0.759
Digital Marketing (DM)	0.617	0.081	7.62	<0.001	0.61	0.456 - 0.778
Customer Loyalty (LP)	0.283	0.095	2.98	0.0038	0.23	0.094 - 0.472

The results of the multiple linear regression test show that the R² value is 0.579, meaning that 57.9% of the variation in UMKM competitiveness can be explained by digital marketing and customer loyalty, while the remaining variation is influenced by other factors outside the model. The F-test yields an F value of 66.73 with a significance of p < 0.001, indicating that the regression model is valid and significant. In terms of individual predictors, digital marketing has a positive and significant effect on UMKM competitiveness with a coefficient of 0.617 (p < 0.001), while customer loyalty also has a positive and significant effect with a coefficient of 0.283 (p = 0.004). Therefore, both independent variables contribute significantly to improving UMKM competitiveness.

Discussion

This study is consistent with the findings of Sharabati et al. (2024), who demonstrated that social media-based digital marketing strategies, SEO, and online advertising significantly improve the performance of SMEs and strengthen their competitiveness. A similar finding was reported by Chasanah et al. (2021), which showed that the COVID-19 pandemic accelerated the

adoption of digital marketing in SMEs in Bogor, where social media became the main channel for promotion and distribution. This aligns with findings in West Sumatra, where the majority of SMEs rely more on social media than on digital advertising.

Several other studies support this argument. Haryadi et al. (2024) in Sumbawa found that SMEs implementing digital marketing had higher average revenues compared to those that did not. Mulyani (2023) reported that the use of marketplaces, social media, and digital promotions significantly affected the sales increase of SMEs in Sidoarjo. Similarly, Pratama et al. (2024) showed that digital marketing strategies in South Surabaya positively impacted SME sales performance.

Digital literacy has been proven to be an important moderating factor in the effectiveness of digital marketing. Atmojo et al. (2024) emphasized that SMEs with high digital literacy are more capable of leveraging digital marketing strategies to improve financial performance. This is reinforced by a case study by Rizkiani (2025) on Seblak Nyenyeny SMEs, which showed that creative use of platform features (such as Instagram Reels, Stories, and influencer collaborations) led to a 35% increase in turnover within three months. However, not all digital marketing strategies yield the same results. Panjaitan et al. (2024) found that social media marketing significantly influenced SME sales in Medan, while video marketing did not show the same impact, suggesting that the choice of strategy should be tailored to the context and target audience.

From a brand engagement perspective, Manalu's (2023) research confirms that social media in marketing communications increases brand awareness and consumer loyalty. Zakiyah et al. (2024) also reported the dominance of Instagram and other social platforms as the main marketing tools for SMEs from 2018 to 2023. Nevertheless, the success of digital marketing strategies is not solely determined by promotional channels but also by organizational capabilities and managerial factors. Wu et al. (2024) highlighted that organizational capabilities explain the variations in SME competitiveness, which is not entirely influenced by digital marketing. Batubara et al. (2024) added the importance of policy interventions and managerial capacity building to support the digital transformation of SMEs in Indonesia. This is consistent with Jadav et al.'s (2023) review, which emphasizes the role of a coherent content strategy and organizational support as key drivers of effective digital marketing.

Furthermore, field results show the dominance of social media use (72% of respondents) compared to marketplaces or paid advertisements, as well as the low average of digital advertising indicators. This condition indicates that many SMEs still rely on organic channels and simple internal capabilities. This finding is aligned with the study by Patma et al. (2021), which identified limited digital literacy and analytical capabilities as barriers in optimizing paid ads or omnichannel strategies. In this context, recent literature emphasizes the importance of organizational capabilities and ecosystem support (e.g., policy support, technical assistance, and platform collaboration) as moderating factors that determine the effectiveness of digital marketing. Indiani et al. (2025) even emphasized that successful e-commerce adoption depends not only on technology access but also on managerial readiness, human resources, and focused policy intervention.

From a mechanistic perspective, this study's findings indicate that digital marketing has a strong direct effect on competitiveness ($\beta \approx 0.617$), while customer loyalty contributes positively but less significantly ($\beta \approx 0.283$). These findings align with consumer behavior and digital marketing theories, where digital channels drive short-term sales increases, while loyalty is built through repeated experiences, quality interactions, and after-sales service. This explains why acquisition strategies based on content or ads can increase sales but do not automatically generate loyalty-based competitive advantage (Patma et al., 2021).

The study by Faliza and Sarwindah (2024) on SMEs in Merawang supports this, showing

that social media positively influences customer loyalty, though its effect is smaller compared to the direct impact on sales. Sitindaon (2025) adds that consumer loyalty is formed through active interaction and the use of customer data via digital CRM. This is reinforced by Nurcayani and Sriyono (2024), who emphasize the role of e-CRM and e-satisfaction as important mediators in building e-loyalty. Rahayu (2024) also found that long-term financial benefits are only achieved when digital strategies are combined with multichannel approaches, personalization, and customer relationship management. In line with this, Mustofa et al. (2024) demonstrated that consumer engagement is a key variable linking digital marketing to brand loyalty.

This study has several policy implications. First, digital capacity-building training focused on paid advertising, simple analytics, and conversion content strategies can improve the effectiveness of SMEs' marketing budgets. Second, mentoring that facilitates the integration of social media with marketplaces/e-commerce will help SMEs shift from organic strategies to more profitable omnichannel strategies. Third, local governments should design support policies in the form of training subsidies, digital incubation, and collaboration schemes with platforms, tailored to the digital maturity level of local SMEs. These recommendations align with the framework for accelerating e-commerce adoption for emerging markets proposed by Indiani et al. (2025).

CONCLUSION

This study shows that digital marketing has a significant impact on enhancing the competitiveness of SMEs in West Sumatra, with a stronger direct impact compared to customer loyalty. Social media serves as the main channel, although the use of paid advertising and marketplaces remains limited. The effectiveness of digital strategies is highly influenced by digital literacy, organizational capabilities, and ecosystem support. Practically, the findings emphasize the need for digital literacy training, mentoring for integrating social media with e-commerce, and regional support policies to help SMEs transition from organic strategies to more sustainable and competitive omnichannel approaches.

REFERENCES

- Abdullah, A. S. A. (2025, July). The Impact of E-Commerce on the Growth of MSMEs in Indonesia. In *9th International Conference on Accounting, Management, and Economics 2024 (ICAME 2024)* (pp. 3126-3130). Atlantis Press. [10.2991/978-94-6463-758-8_260](https://doi.org/10.2991/978-94-6463-758-8_260)
- Andika, A., Jennifer, J., Huang, J. C., & Sebastian, J. C. (2021). Analysis of digital marketing adoption in Indonesian micro, small, and medium enterprises. *Jurnal Manajemen Bisnis*, *18*(3), 308-328. [10.38043/jmb.v18i3.3173](https://doi.org/10.38043/jmb.v18i3.3173)
- Atmojo, Y. D., Harmono, P. D., Hadi, A., Tanong, M., & Sugiharti, S. (2024). Digital Marketing Efficiency and its Impact on the Financial Performance of Export SMEs in Central Java: A Digital Literacy Moderation Approach. *Journal of Economics and Public Health*, *3*(4), 157-166. <https://doi.org/10.37287/jeph.v3i4.6688>
- Batubara, M. M. I., Sigalingging, H. H., & Sihombing, L. L. (2025). Digital transformation for UMKM: Strategies for building branding and marketing based on digital platforms in Pinangsori Village. *Jurnal Pengabdian Masyarakat*, *1*(02), 47-54. <https://sorakgemaintelektual.com/jurnal/index.php/wealth/article/view/105>
- Chasanah, A., Jahroh, S., & Dewi, F. (2021). Digital marketing changes of micro-small enterprises before and during COVID-19 pandemic in Bogor, Indonesia. *Business Review and Case Studies*, *2*(1), 1-1. [10.17358/brcs.2.1.1](https://doi.org/10.17358/brcs.2.1.1)
- Faliza, V. V., & Sarwindah, S. (2024). Pengaruh Pemasaran Digital Melalui Media Sosial Terhadap Customer Loyalty Pada UMKM Di Kecamatan Merawang. *Management Studies and*

- Entrepreneurship Journal (MSEJ)*, 5(2), 5040–5048.
<https://doi.org/10.37385/msej.v5i2.4764>
- Haryadi, W., Ady, S. U., & Sayidah, N. (2025). The Impact Of Digital Marketing On The Income Of Micro, Small And Medium Enterprises (MSMEs). *Jurnal Ekonomi Dan Bisnis Indonesia*, 10(1), 63-69. <https://doi.org/10.37673/jebi.v10i1.6120>
- Indiani, N. L. P., Keshminder, J. S., Wiratama, N. I., & Amertha, G. S. (2025). Unlocking e-commerce potential in SMEs: an integrative framework for adoption in emerging markets. *Humanities and Social Sciences Communications*, 12(1), 1-16. <https://doi.org/10.1057/s41599-025-04952-3>
- Jadhav, G. G., Gaikwad, S. V., & Bapat, D. (2023). A systematic literature review: digital marketing and its impact on SMEs. *Journal of Indian Business Research*, 15(1), 76-91. [10.1108/JIBR-05-2022-0129](https://doi.org/10.1108/JIBR-05-2022-0129)
- Kilay, A. L., Simamora, B. H., & Putra, D. P. (2022). The Influence of E-Payment and E-Commerce Services on Supply Chain Performance: Implications of Open Innovation and Solutions for the Digitalization of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 119. <https://doi.org/10.3390/joitmc8030119>
- Manalu, M. (2023, October). The Evaluation of Marketing Communication Through Instagram for Umkm As A Strategy in Pandemic Time. In *The 6th International Conference on Vocational Education Applied Science and Technology (ICVEAST 2023)* (pp. 584-601). Atlantis Press. [10.2991/978-2-38476-132-6_51](https://doi.org/10.2991/978-2-38476-132-6_51)
- Mustofa, A., Wartiningsih, E., & Sinaga, M. O. (2024). The Influence of Digital Marketing Strategies on Consumer Engagement and Brand Loyalty: A Study on Indonesian E-commerce Platforms. *Journal of Business Administration and Entrepreneurship Innovation*, 1(01), 18–25. Retrieved from <https://jurnal.pnj.ac.id/index.php/baeinnovation/article/view/7324>
- Nurcayani, A., & Sriyono, S. (2024). Boosting Global Customer Loyalty through E-CRM and Digital Marketing Strategies: Meningkatkan Loyalitas Pelanggan Global melalui E-CRM dan Strategi Pemasaran Digital. *Indonesian Journal of Innovation Studies*, 25(1), 10-21070. <https://doi.org/10.21070/ijins.v25i1.1106>
- Panjaitan, T. D., Purba, M. N., & Auza, A. (2025). Analisis Strategi Penggunaan Digital Marketing dalam Meningkatkan Penjualan:(Studi Kasus pada UMKM Alfa di Kota Medan). *Jurnal Bintang Manajemen*, 3(1), 54-71. <https://doi.org/10.55606/jubima.v3i1.3796>
- Patma, T. S., Wardana, L. W., Wibowo, A., Narmaditya, B. S., & Akbarina, F. (2021). The impact of social media marketing for Indonesian SMEs sustainability: Lesson from Covid-19 pandemic. *Cogent Business & Management*, 8(1). <https://doi.org/10.1080/23311975.2021.1953679>
- Pratama, Z. A. B., Eny, E., & Pranata, E. (2024). Pengaruh Media Sosial dan Strategi Pemasaran Digital terhadap Peningkatan Penjualan pada Usaha Mikro, Kecil, dan Menengah (UMKM) di Surabaya Selatan. *Jurnal Manuhara: Pusat Penelitian Ilmu Manajemen Dan Bisnis*, 2(4), 156-170. <https://doi.org/10.61132/manuhara.v2i4.1206>
- Rahayu, S. (2024). Digital Marketing Strategies to Build Customer Loyalty: A Systematic Review of Sustainable Financial Benefits. *Atestasi : Jurnal Ilmiah Akuntansi*, 7(1), 792–806. <https://doi.org/10.57178/atestasi.v7i1.951>
- Rahmat, B., Games, D., & Sari, D. K. (2022). Pengaruh Penerapan Digital Marketing, Customer Relationship Marketing, Kualitas Produk dan Harga terhadap Volume Penjualan UMKM Rendang di Sumatera Barat. *Sang Pencerah: Jurnal Ilmiah Universitas Muhammadiyah Buton*, 8(4), 1036-1047. <https://doi.org/10.35326/pencerah.v8i4.2760>
- Rizkiani, P. E. (2025). Strategi Digital Marketing Melalui Instagram Untuk Meningkatkan Omset

Penjualan UMKM. *Jurnal Ilmiah Bisnis Digital*, 1(2), 102-109. <https://doi.org/10.69533/h9d41c57>

- Sandiva, T. V., & Veri, J. (2024). Analisis Pengaruh Digital Marketing terhadap Pertumbuhan Penjualan UMKM Tinjauan Menggunakan Metode Systematic Literature Review: Analysis of the Influence of Digital Marketing on MSME Sales Growth Review Using the Systematic Literature Review Method. *JOURNAL ISLAMIC ECONOMICS AD DIWAN*, 4(1), 85-93. [10.51192/ad.v4i1.997](https://doi.org/10.51192/ad.v4i1.997)
- Sharabati, A.-A. A., Ali, A. A. A., Allahham, M. I., Hussein, A. A., Alheet, A. F., & Mohammad, A. S. (2024). The Impact of Digital Marketing on the Performance of SMEs: An Analytical Study in Light of Modern Digital Transformations. *Sustainability*, 16(19), 8667. <https://doi.org/10.3390/su16198667>
- Sitindaon, N. (2025). Strategi Pemasaran Digital dalam Meningkatkan Loyalitas Konsumen: Studi pada UMKM di Era Industri 4.0. *Digital Business Progress*, 4(1), 53-59. <https://doi.org/10.70021/dbp.v4i1.209>
- Wibawa, B. M., Baihaqi, I., Nareswari, N., Mardhotillah, R. R., & Pramesti, F. (2022). Utilization of social media and its impact on marketing performance: A case study of SMEs in Indonesia. *International Journal of Business & Society*, 23(1). [10.33736/ijbs.4596.2022](https://doi.org/10.33736/ijbs.4596.2022)
- Wu, C. W., Botella-Carrubi, D., & Blanco-González-Tejero, C. (2024). The empirical study of digital marketing strategy and performance in small and medium-sized enterprises (SMEs). *Technological Forecasting and Social Change*, 200, 123142. <https://doi.org/10.1016/j.techfore.2023.123142>
- Wulandari, R., Nugroho, A., & Derriawan, D. (2025). Supporting Factors of Digital Marketing and Customer Relationship Management and Their Role in Developing the Champion UMKM Model in West Java: Literature Review. *Quantitative Economics and Management Studies*, 6(2), 283-292. [10.35877/454RI.qems3951](https://doi.org/10.35877/454RI.qems3951)
- Zakiyah, A. R., Rahmanto, A. N., & Sudarmo, S. (2023). Trends in using Social Media as UMKM Marketing. *Proceeding ISETH (International Summit on Science, Technology, and Humanity)*, 1942-1949.