



Effect of Artificial Intelligence Implementation and Product Innovation on Digital Marketing Strategy Effectiveness in Palopo City's Micro, Small, and Medium Enterprises

Ananda Ananda^{1*)}, Suhardi M Anwar^{2*)}, Muhammad Aqsa^{3*)}

^{1,2,3)}Faculty of Economics and Business, Muhammadiyah University of Palopo

*Correspondent Author: ndnandayo2t@gmail.com

How to Cite :

Ananda, A., Anwar, S. M. Aqsa, M. (2026). Effect of AI Implementation and Product Innovation on Digital Marketing Strategy Effectiveness in Palopo City's Micro, Small, and Medium Enterprises. *Bima Journal : Business, Management and Accounting Journal*, 7 (1) [955-964](#) . DOI: <https://doi.org/10.37638/bima.7.1.955-964>

ARTICLE HISTORY

Received [20 april 2026]

Revised [3 June 2026]

Accepted [29 June 2026]

KEYWORDS

Artificial Intelligence;
Product Innovation;
Effectiveness; Digital
Marketing Strategy;
MSMEs

This is an open access
article under the [CC-BY-SA](#)
license



ABSTRACT

Purpose: This study aims to analyze the effect of artificial intelligence and product innovation on the effectiveness of digital marketing strategies among MSMEs in Palopo City. **Methodology:** A quantitative approach with a causal explanatory design was employed. The population consisted of MSMEs actively engaged in digital marketing. Using purposive sampling and the MoE formula, a sample of 96 respondents was obtained. Data were collected through questionnaires and analyzed statistically using SmartPLS 3. **Results:** The results show that artificial intelligence and product innovation directly have a positive and significant effect on the effectiveness of digital marketing strategies, both partially and simultaneously. **Findings:** The findings confirm that AI adoption and product innovation are key drivers of digital marketing effectiveness in the local MSME context. **Novelty & Originality:** This study offers novelty by examining AI and product innovation in the context of MSMEs in Palopo City, a region rarely explored in prior research on digital marketing. **Conclusions:** The results imply that the use of AI and product innovation can increase the effectiveness of digital marketing strategies for MSME products in Palopo City. **Type of Paper:** This paper is an empirical research paper.

INTRODUCTION

The rapid development of digital technology has transformed various aspects of life, including marketing. Currently, digital marketing is a primary strategy used by businesses to promote products and reach consumers more widely and efficiently. One technology that is increasingly being implemented in digital marketing strategies is Artificial Intelligence (AI). This technology enables businesses to analyze consumer behavior, automate interactions through chatbots, and develop more targeted, datadriven marketing strategies. Artificial Intelligence (AI) is a branch of computer science that focuses on developing systems or machines capable of performing tasks that typically require human intelligence, such as pattern recognition, decision-making, and natural language processing.

In addition to using technology, product innovation is also a crucial factor in marketing success. Innovations in product design, packaging, and functionality can increase consumer appeal and strengthen a product's position in the market. Product innovation is the process of creating or improving a product with the aim of increasing sales value, meeting consumer needs, or creating competitive advantages. In the context of local products, innovation also plays an important role in maintaining cultural values and regional uniqueness, thus becoming a unique selling point in the increasingly competitive digital market.

This study focuses on mining companies operating in East Luwu Regency, South Sulawesi. This region is one of the largest nickel industry centers in Indonesia, contributing significantly to the national and regional economy. However, the dynamics of the mining industry in this region also face challenges in human resource management, particularly related to employee retention in shift work systems, production target pressures, and working conditions that demand physical and mental endurance. Research on employee retention in the Indonesian mining sector, particularly in the Luwu Timur region, is still relatively limited. Therefore, this study is important to analyze the influence of compensation and workload on employee retention in mining companies in Luwu Timur Regency. Theoretically, this study contributes to enriching the literature on the determinants of employee retention in high-risk industries. Practically, the results of this study are expected to serve as a basis for company management in designing more effective compensation and workload management policies to improve employee retention and organizational sustainability.

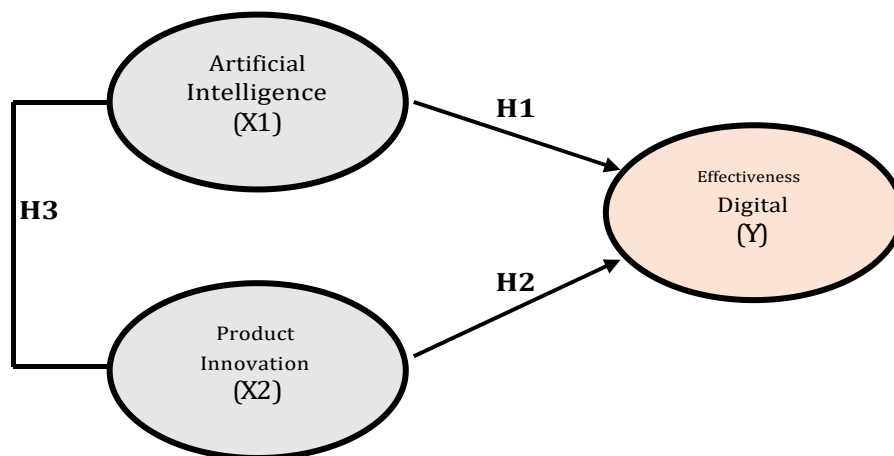
Palopo, as a developing city in South Sulawesi, has significant potential for developing local products, including culinary, handicrafts, and fashion. The local government and educational institutions, such as IAIN Palopo, have initiated digital marketing training for MSMEs. However, the utilization of technologies such as AI and product innovation remains relatively low. Many local businesses still employ conventional marketing strategies, without optimizing available digital tools.

Given this phenomenon, it is important to understand the extent to which the application of Artificial Intelligence and product innovation has influenced the digital marketing strategy of local products in Palopo City. Palopo City, as one of the centers of economic activity in Greater Luwu, has a significant number of MSMEs, particularly in the culinary, trade, and local craft sectors. However, most MSMEs still rely on conventional methods for promotion and sales, such as relying solely on social media (WhatsApp and Facebook) without using analytics or paid advertising features. Only a small number of MSMEs have begun to explore AI-based technologies such as chatbots for customer service or automated product recommendation features in marketplaces.

In terms of product innovation, many MSMEs still lack a focus on developing product differentiation. For example, Palopo's culinary specialties are often sold in the same style without innovative packaging or modern branding, making it difficult to compete in the broader digital market. As a result, despite the product's significant potential, the effectiveness of digital marketing strategies is suboptimal because the product offered lacks unique value to consumers.

This phenomenon demonstrates a gap between the potential use of AI and product innovation and the actual conditions of MSMEs in Palopo. However, if these two aspects can be properly integrated, the effectiveness of MSME digital marketing strategies in Palopo could increase, thereby driving local economic growth and expanding market access for regional products.

Based on several previous research studies and field observations related to the phenomena in the research subjects, the conceptual framework can be described as follows:

Figure 1. Conceptual Framework

Artificial intelligence can provide comprehensive details about the benefits of implementing AI in marketing. Furthermore, training on the use of artificial intelligence can increase the knowledge of MSMEs and positively impact their product sales. Based on these research results, the first hypothesis of this study is formulated as follows:

H1: It is suspected that Artificial Intelligence has a positive and significant influence on the effectiveness of MSMEs' digital marketing strategies in Palopo City.

They not only adapt their products to global market needs, but also create products that can lead trends and create new demand. An effective marketing strategy involves a deep understanding of consumer preferences in various markets, intelligent product adaptation, and the integration of innovation throughout the company's value chain. Based on the results of this study, the first hypothesis of this study is formulated as follows:

H2: It is suspected that Product Innovation has a Positive and Significant Influence on the Effectiveness of MSME Digital Marketing Strategies in Palopo City.

Research shows a positive simultaneous influence between AI and product innovation on the effectiveness of marketing strategies. AI and product innovation have a consistent positive influence on marketing strategies when aligned with consumer preferences. Social media marketing strategies and the use of AI have a positive impact on business growth. Based on these research results, the first hypothesis of this study is formulated as follows:

H3: It is suspected that Artificial Intelligence and Product Innovation simultaneously have a positive and significant influence on the effectiveness of MSMEs' digital marketing strategies in Palopo City.

METHOD

This study employed a quantitative research design with an explanatory approach. This design was survey-based, where data was collected through questionnaires to analyze the direct and indirect effects of independent variables on the dependent variable.

The population of this study was MSMEs in Palopo City that are actively involved in digital marketing. Digital marketing encompasses the use of social media (Instagram, Facebook, TikTok, WhatsApp Business), marketplaces (Shopee, Tokopedia, Lazada, etc.), and websites/apps for product promotion and sales.

The sampling technique used purposive sampling (non-probability sampling), where respondents were selected based on specific criteria to ensure relevant and representative data. To determine a representative sample size, the MoE formula was used with a precision level or margin of error of 5% (0.05), resulting in a sample size of 96 respondents.

The main instrument used in this study to collect data was a structured questionnaire.(structured questionnaire)Each item (statement) in the questionnaire is arranged based on indicators measured using a 5-point Likert scale.

The questionnaire will be statistically analyzed to test the validity and reliability of the instrument. A statement item is considered valid if it has a statistically significant correlation coefficient ($p < 0.05$) and exceeds a certain threshold ($r > 0.30$) [8]. Invalid statement items will be considered for revision or removal from the final questionnaire.

Data analysis used descriptive inferential techniques, namely research that is able to describe the relationship between variables through statistical tools with certain stages and conditions to test hypotheses and link one variable to another. The statistics used are inferential statistics, namely statistical techniques using Structural Equation Modeling (SEM) analysis through the Smart PLS 3 application.

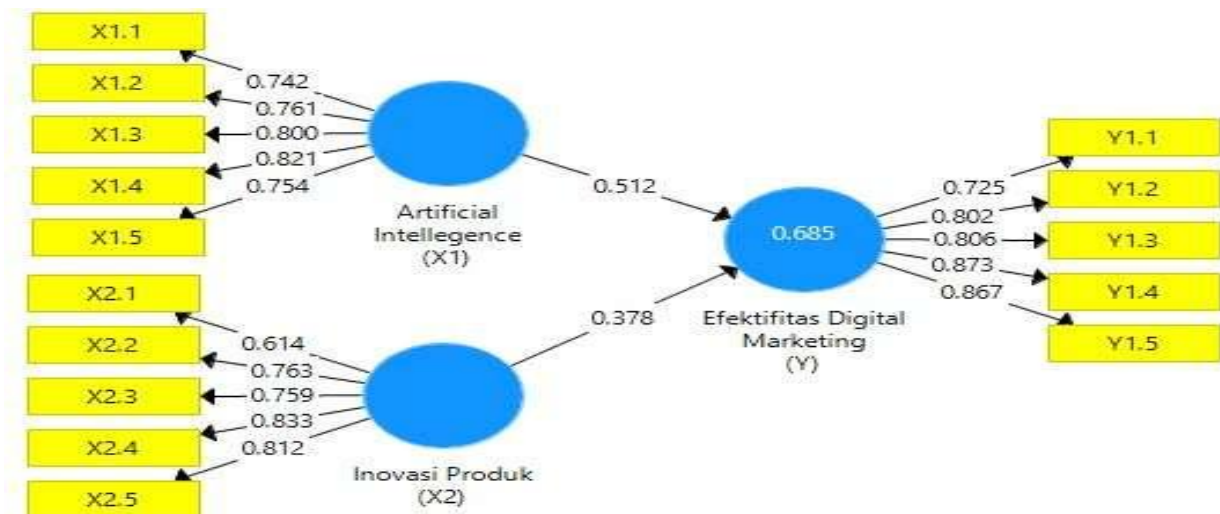
RESULTS AND DISCUSSION

Results

Validity Test

This validity test was conducted to measure the appropriateness of each indicator to describe the variables used in the instrument. Validity testing used two methods: Outer Loading and Average Variance Extracted (AVE) values. Based on the data processing results, the outer loading values were obtained, as shown in the figure below:

Figure 2. Outer Loading



In the image above, we can see the loading factor values for each variable. The required loading factor value is > 0.6 . The validity test conducted showed that all outer loading values were in accordance with the requirements, where all values for each indicator variable were above 0.6, thus declaring the model valid.

Next, the outer loading test uses the AVE value. A variable can be said to be valid when it is able to explain the type of indicator with an Average Variance Extracted (AVE) value of 0.5 or more. The required and expected AVE value is > 0.5 . The results of the AVE value validity test can be seen in the table below:

Table 1. Average Variance Extracted Value

	Average Variance Extracted (AVE)	Expl
Artificial Intelligence_(X1)	0.602	Valid
Digital Marketing Effectiveness_(Y)	0.666	Valid
Product Innovation_(X2)	0.578	Valid

Source: Processed Data, 2026

Based on the table above, we can see that the AVE value of all variables is above the requirement, namely > 0.5 , so this model can be declared valid from the outer loading test and AVE value.

Reliability Test

To determine how consistently each indicator explains its variable construct, the analysis results are shown in the composite reliability or Cronbach's alpha column, which is set at a value of ≥ 0.7 . The data processing results for this value can be seen in the table below:

Table 2. Construct Reliability

	Cronbach's Alpha	Composite Reliability	Expl
Artificial Intelligence_(X1)	0.837	0.883	Reliable
Digital Marketing Effectiveness_(Y)	0.874	0.909	Reliable
Product Innovation_(X2)	0.814	0.871	Reliable

Source: Processed Data, 2026

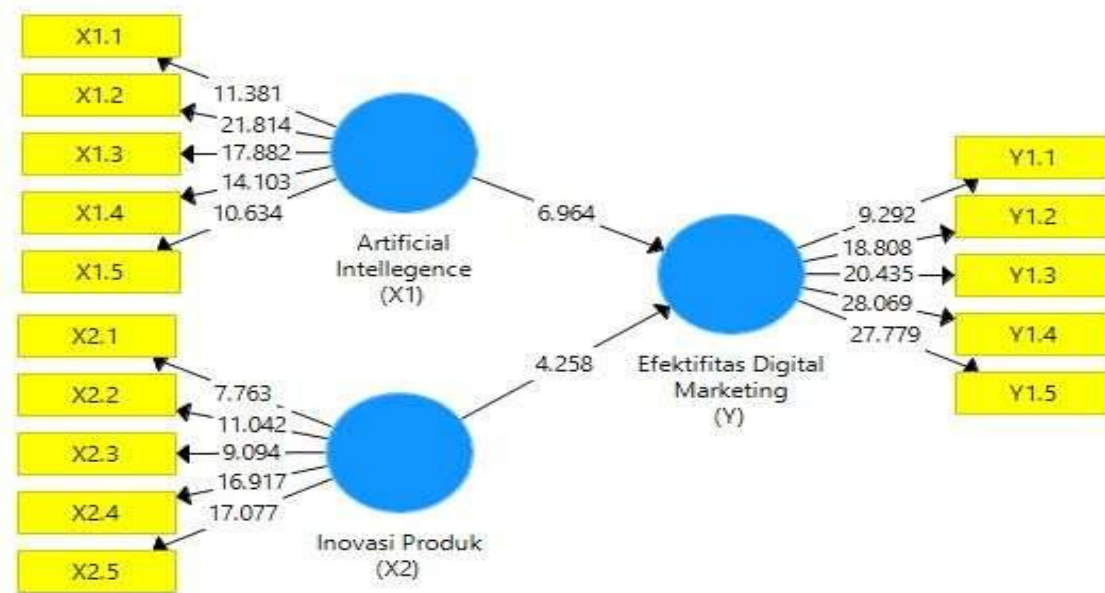
Bootstrapping

Bootstrapping testing to determine the path coefficients or significance of the independent variable (X) on the dependent variable (Y) to test the research hypothesis. An independent variable can be said to have a significant effect on the dependent variable if the significant value of the T statistic $> t$ table (in this study based on t table = 1.983) and P value < 0.05 , the influence value is shown in the figure and table below:

Table 3. Direct Effect (T-Test)

	T Statistics (O/STDEV)	P Values	Explanation
Artificial Intelligence_(X1) -> Digital Marketing Effectiveness_(Y)	6,964	0,000	Positive Significant
Product Innovation_(X2) -> Digital Marketing Effectiveness_(Y)	4,258	0,000	Positive Significant

Source: Processed Data, 2026

Figure 3. Bootstrapping Analysis

To see the influence of independent variables on dependent variables simultaneously (together), the following are the results of the R-Square test for this study:

Table 4. Simultaneous Effect (R-Square)

	R Square	R Square Adjusted
Digital Marketing Effectiveness_(Y)	0.685	0.678

Source: Processed Data, 2026

For the R Square value, the measurement categorization with the value construction (<0.19 as weak), (0.19 to 0.33 as moderate) And(>0.33 as strong). Based on the table above, the ability of exogenous variables simultaneously to explain the variables Proceedings homepage. endogenous is assumed to be at the level of belongingstrong influenceThis can be seen from the results of the smart PLS analysis for R Square which shows a figure of $0.685 > 0.33$ as the assessment standardization.

Hypothesis Testing

First Hypothesis: Artificial intelligence is suspected to have a positive and significant influence on the effectiveness of digital marketing strategies.

H1: The results of the statistical T analysis obtained a calculated t value = $6.964 > t_{table} = 1.983$ with a P Value of 0.000 or smaller than the Cut off Value of 0.05. This means that the Artificial Intelligence variable has a positive and significant effect on the effectiveness of digital marketing strategies, so the first hypothesis is statedaccepted.

Second Hypothesis: It is suspected that Product Innovation has a Positive and Significant Influence on the Effectiveness of Digital Marketing Strategy

H2: The results of the statistical T analysis obtained a calculated t value = $4.258 > t_{table} = 1.983$ with a P Value of 0.000 or smaller than the Cut off Value of 0.05. This means that the Product Innovation variable has a Positive and Significant effect on the Effectiveness of Digital Marketing Strategy, so the second hypothesis is statedaccepted.

Third Hypothesis: It is suspected that Artificial Intelligence and Product Innovation simultaneously have a positive and significant influence on the effectiveness of digital marketing strategies.

H3: The analysis results obtained an r-square value of $0.685 > 0.33$ as the assessment standardization. This means that simultaneously the variables of Artificial Intelligence and Product Innovation have a positive and significant effect on the effectiveness of digital marketing strategies, so that the third hypothesis is stated.

DISCUSSION

The statistical analysis revealed highly significant findings between the research variables, namely artificial intelligence technology and product innovation, on the effectiveness of digital marketing strategies. The three hypotheses proposed in this study consistently demonstrate positive and significant results, indicating that these two independent variables contribute to increasing the effectiveness of digital marketing strategies.

Artificial intelligence's ability to analyze consumer data in real-time, personalize content, and automate marketing processes can provide a deep understanding of consumer behavior, thereby influencing the effectiveness of digital marketing strategies. Advanced and well-integrated artificial intelligence plays a crucial role in increasing the effectiveness of digital marketing strategies in this modern era. With the ability to optimize targeting, increase engagement, and provide accurate insights, companies can create more effective and measurable marketing strategies.

The results of this study are in line with the findings of several studies which show that the application of artificial intelligence technology in digital marketing contributes to increasing the effectiveness of marketing strategies.

Marketing significantly influences purchasing decisions. Similar findings were also demonstrated in research that found digital marketing has a positive influence on consumer interest, where the better the digital marketing, the higher the level of consumer interest. This finding emphasizes the importance of integrating artificial intelligence into digital marketing strategies to increase effectiveness and optimize results.

Data analysis also shows that product innovation has a positive and significant influence on the effectiveness of digital marketing strategies. The ability of product innovation to create uniqueness, differentiation, and added value for a product can provide interesting and relevant marketing content, thereby influencing the effectiveness of digital marketing strategies. Sustainable and market-oriented product innovation plays a crucial role in increasing the effectiveness of digital marketing strategies in an era of intense business competition. This positive and significant influence is also influenced by product innovation that can provide competitive advantages that can be communicated effectively through digital platforms, so that digital marketing strategies tend to be more attractive and easily understood by consumers.

The results of this study are in line with the findings of several studies showing that product innovation contributes to increasing digital marketing effectiveness and overall marketing performance. Research shows that product innovation has a positive and significant effect on marketing performance, where the higher the innovation, the higher the marketing performance of a product. Similarly, other studies have revealed that digital marketing has a positive influence on purchasing decisions, demonstrating the importance of a digital marketing strategy supported by product innovation. These findings emphasize the importance of synergy between product innovation and digital marketing strategy to create optimal marketing effectiveness and sustainable competitive advantage.

Data analysis shows that artificial intelligence and product innovation simultaneously have a positive and significant influence on the effectiveness of digital marketing strategies. The combination of artificial intelligence's capabilities in analyzing consumer data and personalizing content integrated with continuous product innovation can provide a strong synergy in creating effective and targeted digital marketing strategies. Artificial intelligence and product innovation implemented simultaneously play a crucial role in increasing the effectiveness of digital marketing

strategies in the Industry 5.0 era. By optimizing AI technology to analyze consumer behavior and communicate the advantages of innovative products through digital platforms, companies can achieve maximum and sustainable marketing results.

In addition, the combination of AI and product innovation creates an adaptive and responsive marketing ecosystem, where AI can perform real-time optimization of innovative product marketing campaigns based on consumer feedback and engagement. The synergy of these two variables also enables in-depth personalization and precise targeting, so that innovative products can be communicated to the right consumer segments with relevant and engaging messages.

The results of this study are in line with the findings of several studies showing that the integration of artificial intelligence and product innovation contributes to significantly increasing the effectiveness of digital marketing strategies. Research shows that the implementation of AI in digital marketing contributes to improving key marketing metrics such as conversion rates and reducing customer acquisition costs, where the majority of online purchasing decisions will be influenced by AI-based recommendations. Similarly, other studies have revealed that artificial intelligence is very important in helping marketers set targets and achieve their goals more effectively and efficiently at every stage of the marketing strategy. These findings emphasize the importance of integrating artificial intelligence and product innovation in creating a digital marketing strategy that is effective, adaptive, and able to face the dynamics of business competition in the digital era.

CONCLUSION

The results of this study provide several important practical implications. The findings suggest that companies seeking to improve the effectiveness of their digital marketing strategies need to adopt an integrated approach between artificial intelligence and product innovation. AI has been shown to automate marketing tasks with high accuracy, identify market trends, and analyze user interests through personalized, relevant content. However, companies must balance AI innovation with customer trust, as consumers value AI's efficiency but still expect human interaction and control over their personal data privacy.

From a managerial perspective, this research implies the need for a strategic transformation in digital marketing approaches that integrate AI technology with the continuous development of innovative products. Marketing managers need to develop AI capabilities that balance achieving short-term targets with building long-term consumer trust. AI is not only changing the way brands communicate with consumers, but also how they understand, predict, and influence consumer behavior in the digital age.

ACKNOWLEDGEMENT

My deepest gratitude goes to my supervisor who provided valuable guidance, direction, and input throughout the research process. My appreciation is also extended to the respondents who took the time to participate in this research. I would also like to express my gratitude to my parents, family, and friends for their unwavering moral support, motivation, and prayers. I express my gratitude to God Almighty for all His grace and blessings, enabling me to complete this article successfully and on time.

REFERENCES

- Adeleye, R. A., Awonuga, K. F., Asuzu, O. F., Ndubuisi, N. L., & Tubokirifuruar, T. S. (2024). Digital marketing analytics: A review of strategies in the age of big data and AI. *World Journal of Advanced Research and Reviews*, *21*(2). <https://doi.org/10.30574/wjarr.2024.21.2.0395>
- Agung, M., & Hendra, H. (2023). Product innovation in the context of international marketing: Strategy and implementation. *Jurnal Minfo Polgan*, *12*(2). <https://doi.org/10.33395/jmp.v12i2.13306>

- Bouhelal, F., & Adouka, L. (2022). Shift from product innovation strategy to marketing innovation strategy to add value to the firm. *Management Dynamics in the Knowledge Economy*, *10*(2). <https://doi.org/10.2478/mdke-2022-0012>
- Faerrosa, L., Athar, H. S., & Widiana, H. (2022). Market orientation and product innovation as an MSME marketing strategy. *Amwaluna: Jurnal Ekonomi dan Keuangan Syariah*, *6*(2). <https://doi.org/10.29313/amwaluna.v6i2.10044>
- Firman, Saerang, I. S., & Nelwan, O. S. (2024). The influence of digital competency, digital organizational culture and organizational citizenship behavior on employee performance at Bank Sulutgo. *International Journal of Humanities, Social Sciences and Innovation Management*, *2024*(2), 15–31. <https://pubjournals.com/>
- Haudi, Wijoyo, H., & Cahyono, Y. (2020). Effect of product innovation and marketing strategy on consumer purchase decisions in Indonesia. *Journal of Critical Reviews*, *7*(13).
- Huang, M. H., & Rust, R. T. (2021). A strategic framework for artificial intelligence in marketing. *Journal of the Academy of Marketing Science*, *49*(1). <https://doi.org/10.1007/s11747-020-00749-9>
- Kanagal, N. B. (2015). Innovation and product innovation in marketing strategy. *Journal of Management and Marketing Research*, *18*.
- Kotler, P., Keller, K. L., Brady, D. M., Goodman, M., & Hansen, M. T. (2012). *Marketing management*. Ligeza, A. (1995). Artificial intelligence: A modern approach. *Neurocomputing*, *9*(2). [https://doi.org/10.1016/0925-2312\(95\)90020-9](https://doi.org/10.1016/0925-2312(95)90020-9)
- Maihani, S., et al. (2023). The role of artificial intelligence (AI) in marketing innovation. *Warta Dharmawangsa*, *17*(4). <https://doi.org/10.46576/wdw.v17i4.3817>
- Muhammad Iqbal, I., Muhammad Fahmi Julianto, F., Umi Khultsum, U., & Destiana Putri, D. (2024). Using artificial intelligence (AI) as a supporting media for marketing micro, small, and medium enterprises (MSMEs) products in special Borneo MSMEs. *Journal of Researcher and Community Service Officer Jotika*, *3*(2). <https://doi.org/10.56445/jppmj.v3i2.117>
- Ningrum, S., Fitra, V. D., & Sanjaya, V. F. (2020). The influence of product innovation, competitive advantage, and marketing strategy on marketing performance. *Jurnal MUTIARA Manajemen*, *5*(2). <https://doi.org/10.51544/jmm.v5i2.1614>
- Purchase, S., & Volery, T. (2020). Marketing innovation: A systematic review. *Journal of Marketing Management*, *36*(9–10). <https://doi.org/10.1080/0267257X.2020.1774631>
- Sari, D., Kusuma, B. A., Sihotang, J., & Febrianti, T. (2023). The role of entrepreneurial marketing & innovation capability in the performance of SMEs during the covid-19 pandemic: Evidence of MSMEs in West Java. *Cogent Business & Management*, *10*(1). <https://doi.org/10.1080/23311975.2023.2194091>
- Shaik, M. (2023). Impact of artificial intelligence on marketing. *East Asian Journal of Multidisciplinary Research*, *2*(3). <https://doi.org/10.55927/eajmr.v2i3.3112>
- Supriyadi, E. I., & Asih, D. B. (2021). Implementation of artificial intelligence (AI) in the field of public administration in the era of industrial revolution 4.0. *Jurnal RASI*, *2*(2). <https://doi.org/10.52496/rasi.v2i2.62>
- Wiji Prasetyo, B., & Firmantyas Putri Pertiwi, I. (2021). The influence of product innovation, marketing strategy, and entrepreneurship orientation on sharia hotel marketing performance in the Covid-19 pandemic period with competitive advantage as an intervening variable. *Journal of Business and Management Review*, *2*(9). <https://doi.org/10.47153/jbmr29.2122021>
- Wiryawan, I. P. G. H., & Seminari, N. K. (2022). The role of product innovation in mediating market orientation on marketing performance. *E-Jurnal Manajemen Universitas Udayana*, *11*(6). <https://doi.org/10.24843/ejmunud.2022.v11.i06.p02>

Wu, C. W., & Monfort, A. (2023). Role of artificial intelligence in marketing strategies and performance. *Psychology & Marketing*, *40*(3). <https://doi.org/10.1002/mar.21737>