

Role of Artificial Intelligence-Enabled Marketing Strategies on Purchase Decisions

R.S. Latha¹ and M. Chandran²

¹Vels Institute of Science, Technology and Advanced Studies (VISTAS), Pallavaram, Chennai, Tamil Nadu, India

²Head and Research Supervisor, Department of Commerce, Vels Institute of Science, Technology and Advance Studies (VISTAS), Pallavaram, Chennai, Tamil Nadu, India

E-mail: ¹shemalatha922@gmail.com, ²drmkcv@gmail.com

ORCID: ¹<https://orcid.org/0009-0007-0783-9035>, ²<https://orcid.org/0000-0001-8675-9947>

(Received 10 December 2024; Revised 25 January 2025, Accepted 12 February 2025; Available online 28 March 2025)

Abstract - Modern science's knowledge and technology contributed significantly to transforming all marketing strategies into the strongest digitalization phenomenon, which has triggered a scientific technological revolution across industries. The main objectives of the study are to enumerate and validate all the components of artificial intelligence-enabled marketing strategies and to ascertain the existing factors responsible for the purchase decision process of customers in the study area. The researcher adopted the convenience sampling method and collected 467 samples from the study area. It is concluded that there is a significant influence of customer needs, customer expectation, price consciousness, quality consciousness, and perceived prestige on the psychological effects of purchase decisions of customers. These factors motivate them to analyze the important requirements of the product, its utility, attributes, and extraordinary performance.

Keywords: AI-Marketing, Digitalization, Purchase-Behavior, Psychological-Factors, Customer-Expectations

I. INTRODUCTION

The knowledge and technology of modern science contributed significantly to transforming all marketing strategies into the strongest digitalization phenomenon, which has triggered a scientific technological revolution across industries. The technological augmentation and knowledge development in the marketing firms motivate them to introduce a new technological approach, namely artificial intelligence, which inherits the phenomenon of digitalisation (Ciasullo et al., 2022). Successful business management and traditional transformation of digital management can be achieved through the components of artificial intelligence (Donkor & Zhao, 2024; Kadhim et al., 2023). This process gathers information about customers to the firms directly through search engines and can design notions and ideas for the marketers to shift their traditional business management to technologically advanced management (Kannammal et al., 2023).

The marketing growth throughout the world has increased by \$ 124.55 billion due to the introduction of technological convenience to marketers and useful to maintain proximity with their customers. Artificial intelligence enables

marketers through augmented technological strategies and also empowers the firms to reach their customer engagement process as well as the maintenance of customer relationship management (Dias et al., 2023). The vision and enduring capabilities of marketers in updating the technology and official usage of artificial intelligence can easily enhance their marketing and also be useful to increase their customer base within a short period (Ismail et al., 2023). The potent synergy of artificial intelligence over marketing technology gives conspicuous outcomes and substantial marketing success to marketers (Mahoney & Tang, 2024).

The artificial intelligence-enabled marketing technological approach is directly linked with the decision-making process and customer engagement process with the strong bonds of knowledge and technology (Naz & Kashif, 2025). The purchase decisions of marketers, marketing strategies of the marketer, customer relationship management, production and business management, and survival of the firms in the market can be easily judged by retaining attractive customers (Perov & Perova, 2024). Companies are interested in implementing all the components of artificial intelligence to take their decision-making process and also to implement the customer engagement process successfully; therefore, the present study is focusing on the predominant roles played by the components of artificial intelligence in changing the consumer behavioral aspects, respectively.

II. LITERATURE REVIEWS

Avotra et al., (2021) These authors argued that artificial intelligence and its massive development yielded all the marketers to take their dynamic decision-making and customer engagement process vigorously (Sobha Rani, 2019). Artificial intelligence is very useful for consumers to gain awareness of newly introduced products and also useful to retain the strong bonds of customer relationship management (Avotra et al., 2021). Marketers also design their innovative marketing strategies based on artificial intelligence information regarding their customers.

Sama, (2019) enumerated that artificial intelligence can exhibit the efficiency of the missions of marketers and also support them technologically, together with information about customer needs, customer expectation, and their previous satisfaction levels (Sama, 2019). Artificial intelligence, otherwise called machine intelligence, meticulously observes the movement of customers based on their psychological notions and changes.

Zhou et al., (2023) These authors demanded all the components of artificial intelligence and machine learning will establish the marketing boundaries to mitigate uncertainty existence in the marketing arena (Zhou et al., 2023). The dynamic components and landscapes of consumer behaviour and their marketing dynamics in the liberalised and globalised phenomenon of the world economy compel all marketers to adopt technologically augmented artificial intelligence components in their marketing phenomenon.

Bandi et al., (2023) identified the ability of artificial intelligence for their dynamic involvement in anatomically analyzing the extensive database of their customers, social media users, and the newly introduced customers (Bandi et al., (2023). Artificial intelligence facilitates the development of marketing strategies over targeted consumers and is also useful in making the most powerful and innovative insights for the successful implementation of profound business strategies. It optimistically resonates with the customers and transforms them into loyal customers.

Gupta et al., (2024) empirically highlighted the importance of artificial intelligence in the global marketing phenomenon to anticipate optimistic changes in the psychological outcome of customers and be able to offer the best satisfaction to the customer needs (Gupta et al., (2024). Artificial intelligence is realised as a powerful marketing tool by all the marketers to reach the customers very easily and, at the same time, is used to interact with them to understand their needs and expectations.

Lim et al., (2022) empirically proved that artificial intelligence systematically transformed all marketing strategies into human-centric sales processes and convinced the customer needs and expectations as the predominant factors for successful business marketing strategies (Lim et al., 2022). Artificial intelligence encourages visitors to the business market and motivates them to be practically involved in the process of customer relationship management.

Glickman & Zhang, (2024) identified that most of the firms analytically understood the integrated importance of artificial intelligence and its application in all business functions (Glickman & Zhang, 2024). The marketing strategies and best strategies for the profitability of the marketers depend upon customer experience and a rapid improvement in the interactive process between marketers and customers. Marketers are interested in investing 75% of their resources in artificial intelligence for a better understanding of customer experience.

Chandra et al., (2022) These authors generated all the advantages of the integrated solutions of artificial intelligence available in the marketing strategies as well as in the business motives (Chandra et al., 2022). There are many integrated advantages of artificial intelligence in return, namely price, growth and development of business, customer relationship management, identification of potential customers, and ultimately, dehumanization and compromised privacy.

III. RESEARCH GAPS

The above-mentioned empirical research papers on artificial intelligence revealed the close relationship existence among artificial intelligence, marketing strategies, and the purchase decision process of customers, but they did not mention the nature of the relationship with empirical evidence as well as an Indigenous model to prove the components of artificial intelligence and the marketing strategies (Andriana et al., 2025). The participation process of customers depends upon the marketing strategies of the marketers that emerged from the augmented, innovative and modern technological development called artificial intelligence but these reviews and research works did not unravel the existence of a significant impact of artificial intelligence in creating the marketing strategies to motivate the customers for the optimistic purchasing decision process. The highlighted research works elucidated that artificial intelligence can create more awareness among consumers, but they did not reveal the deep association between artificial intelligence strategies and consumer awareness. Therefore, the present research work is focussing on all these above-mentioned research gaps to unravel the truth with empirical evidence in the form of responses from customers.

IV. OBJECTIVES OF THE STUDY

- Enumerate and validate all the components of artificial intelligence-enabled marketing strategies.
- To ascertain the existing factors responsible for the purchase decision process of customers in the study area.
- To find the influence of artificial intelligence-enabled marketing strategies on the purchase decision process of customers.

V. HYPOTHESES

- There is a significant difference among the components of artificial intelligence-enabled marketing strategies.
- There is a significant difference among the factors of the purchase decision process of the customers.
- There is a significant influence of artificial intelligence-enabled marketing strategies on the purchase decision process of customers.

VI. RESEARCH METHODOLOGY

The main aim of this research is to extract the components of artificial intelligence-enabled marketing strategies generally adopted by marketers in the perception of customers and their subsequent impact on the purchase decision process of customers in the study area. To gain the validation process, the dimensions of artificial intelligence-enabled marketing strategies are designed from literature reviews. There are 20 variables generated from literature reviews regarding artificial intelligence-enabled marketing strategies in the form of statements, which are responded to by the respondents in the psychological scales. Similarly, the dimensions of the purchase decision process are also generated from literature reviews, which also consist of 20 variables to get the exact opinion of customers in the study area. Besides these independent and dependent variables, the researcher also used the demographic profile of customers with the perceptual difference over the predominant factors of gender, age, educational qualification, and income.

The formulation of the research instrument ultimately leads to the reliability testing process and validity evaluation process. The reliability testing process is achieved through the Cronbach alpha method for all 40 psychological variables and obtained the value 0.894, which is greater than the required benchmark value of 0.75 to give an optimistic signal to the researcher to conduct the main study. These 40 statements generated for artificial intelligence-enabled marketing strategies and the purchase decision process of customers is well understood and motivated the customers to contribute their opinion. The pilot study is finally achieved by collecting 111 responses from different parts of the great metropolitan city of Chennai using convenience and snowball sampling. The culmination of the pilot study successfully led to the initiation of the main study with the help of the same convenience and snowball sampling techniques applied over all the respondents of Chennai city to collect 467 responses successfully. All these 467 responses

are found without flaws, and they are usable; therefore, the sample size of the research can be considered as 467.

These samples are useful to build and verify the objectives and also to test the research hypotheses formulated from the research gaps. The responses are numerically coded in the SPSS package version 23 to empirically investigate and anatomically evaluate the validation of factors of artificial intelligence-enabled marketing strategies and the purchase decision process. At the point of inception and face validity evaluation, exploratory factor analysis is applied over the primary data to extract the factors of artificial intelligence-enabled marketing strategies and the purchase decision process. In the second step of the validation process of content validity, confirmatory factor analysis is exploited to confirm the factors of artificial intelligence-enabled marketing strategies and participation process. The multiple factors of independent variables and dependent variables ultimately lead to the application of a general linear model with the computed values and their significant relationship between independent and dependent variables. This generalised linear model, as well as the confirmatory factor analysis, is useful to test the hypothesis as well as to verify the objectives without any hindrances.

VII. ANALYSIS AND DISCUSSION

In this part of the analytical approach, firstly, the factors of the artificial intelligence-enabled marketing strategies and the purchase decision are determined separately. Consequently, an exploratory factor analysis is done for 20 variables on customer perception of artificial intelligence-enabled marketing strategies adopted by the marketers from the study. The results are given in Table I, where five predominant factors and their cumulative variance and separate variance are identified. Table I shows the main forces having an impact on shaping customer perceptions and decision-making using AI-driven marketing.

TABLE I FACTORS OF ARTIFICIAL INTELLIGENCE ENABLED MARKETING STRATEGIES

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.478	22.388	22.388	2.950	14.751	14.751
2	1.808	9.040	31.428	2.470	12.352	27.103
3	1.669	8.343	39.771	1.847	9.235	36.338
4	1.178	5.890	45.661	1.648	8.238	44.576
5	1.123	5.614	51.276	1.340	6.700	51.276
6	1.063	5.313	56.588			
7	.932	4.661	61.249			
8	.858	4.291	65.540			
9	.835	4.173	69.713			
10	.736	3.680	73.393			
11	.699	3.495	76.888			
12	.664	3.319	80.208			
13	.642	3.208	83.416			
14	.576	2.880	86.296			
15	.540	2.700	88.996			
16	.521	2.603	91.598			
17	.472	2.360	93.958			
18	.431	2.154	96.112			
19	.401	2.005	98.117			
20	.377	1.883	100.000			

As shown in Table I, the table of total variance shows that 20 of the variables of artificial intelligence-enabled marketing strategies are extracted into 5 factors for underlying variables. These underlying variables need to have a meaning because they cumulatively have a variance from 51.276% with individual variances from 14.751%, 12.352%, 9.235%, 8.238%, and 6.700%, respectively. Table I also depicts that the artificial intelligence-based marketing strategies are

constructed upon five factors: customer needs, customer expectations, price consciousness, quality consciousness, and perceptual prestige (Naz & Kashif, 2025). Similarly, the 20 variables contained in the participation process were subjected to an exploratory factor analysis, which produced the following additional relevant factors, as shown in Table I.

TABLE II FACTORS OF PURCHASE DECISION

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.951	24.753	24.753	2.760	13.799	13.799
2	2.219	11.096	35.849	2.752	13.760	27.559
3	1.606	8.032	43.882	2.486	12.428	39.987
4	1.437	7.186	51.067	2.216	11.080	51.067
5	1.058	5.288	56.355			
6	1.030	5.152	61.507			
7	.868	4.338	65.845			
8	.826	4.132	69.977			
9	.781	3.907	73.884			
10	.758	3.790	77.675			
11	.644	3.219	80.893			
12	.555	2.776	83.669			
13	.525	2.625	86.294			
14	.478	2.389	88.684			
15	.452	2.262	90.946			
16	.416	2.080	93.026			
17	.402	2.011	95.038			
18	.390	1.948	96.986			
19	.315	1.574	98.559			
20	.288	1.441	100.000			

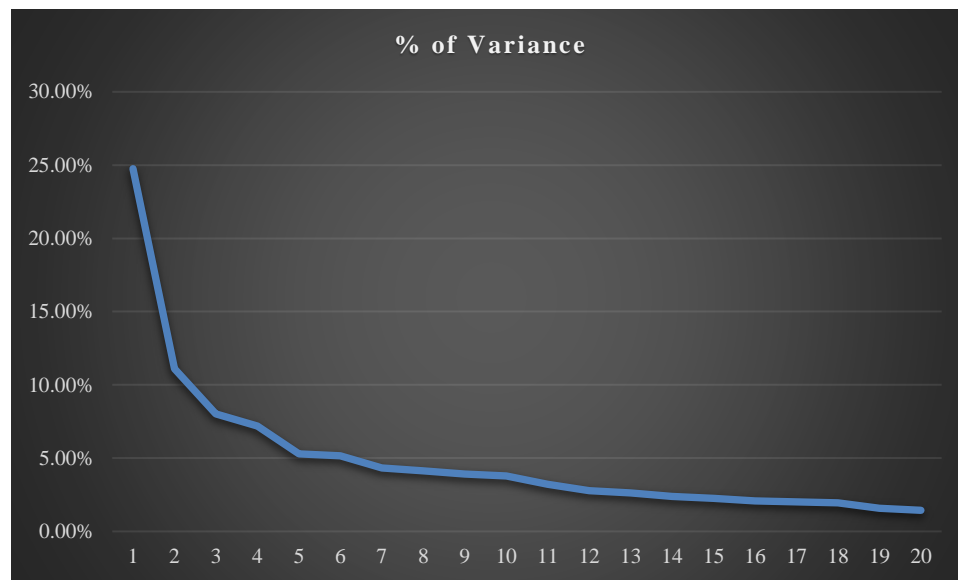


Fig 1: Graphical Representation of Factors of Purchase Decision

As shown in Table II, the variance expectation table reduces 20 variables related to the purchase decision process into four principal factors. Cumulative variance accounted for by these factors is 51.067%. The variances are 13.799%, 13.760%, 12.428%, and 11.080%, respectively. Based on this, we can conclude that each one of the four factors has five discussed variables in common. The product importance, the product

utility, the product performance, and the product attributes are identified as the first, second, third, and fourth factors, respectively (Dasuki et al., 2025). These findings demonstrate how important variables impact consumer buying behavior and the importance of artificial intelligence-based marketing strategies in making buying decisions. After being validated by exploratory factor analysis, the extracted

variables are further validated using confirmatory factor analysis to validate the identified factor. Fig. 1 is designed to represent those relationships with a visual so that you have a complete picture of how S.M.A.R.T. Marketing powered by AI influences consumer preferences. In Table II, the matrix of structured factor loadings supports the identification of the determinants of buying behavior that have a significant impact on purchasing behavior. These insights underscore the factor of AI in maximizing marketing tactics, guaranteeing a data-driven course to customer relations, and making conclusions.

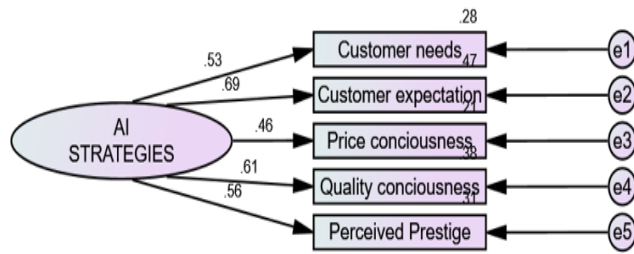


Fig. 2 Confirmation of the Components of AI Strategies

The validity of the previously identified factors of artificial intelligence-enabled services was confirmed using confirmatory factor analysis, and the values of the respective variables were found to be 0.53, 0.69, 0.46, 0.61, and 0.56, respectively. All these values combined are higher than expected (0.40), and these statistically significant and established values affirm that 5 factors of AI-enabled marketing strategies positively impact the marketing outcome. Therefore, these factors may be used as independent variables in future research by computing total average scores (Bhatnagr & Rajesh, 2024).

Further validation of its reliability was done while the four factors influencing the purchase decision were subjected to a similar confirmatory factor analysis. These findings are captured in the visual representation in the fig. 2, depicting the organized links among the AI-driven marketing tactics, and how consumers act to purchase the goods for themselves. In this light, the results corroborate the findings of identified

factors, supporting their consistency with regard to forming the basis of marketing strategies and decision making.

Fig. 3 shows values of strong explanatory power (correlation of 0.74, 0.50, 0.73, and 0.54 respectively). This implies that each of the four above factors in general significantly affects the consumers' decision to purchase and hence are essential in the analysis of the area of consumer behavior (Huang & Rust, 2021). Additionally, fit indices from total proportion scores of the latent variables surpass the benchmark values, indicating and ascertaining the factors of the artificial intelligence marketing strategies and their effect on purchase decisions as revealed by the existing model. These relationships are visually depicted in Fig. 3, which shows how the usage of AI for marketing efforts leads to shaping customer preferences as well as their choice-making.

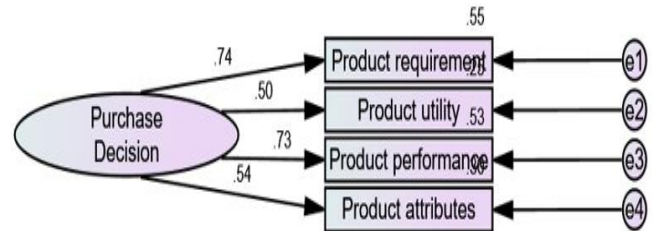


Fig. 3 Confirmation of Components of Purchase Decision

The researcher calculated total average scores for each independent and dependent variable in separated ways and then applied a generalized linear model (GLM), which consists of multiple independent and dependent variables (Staniewski & Awruk, 2022). Such an approach enabled us to examine relations between artificial intelligence aided constructs of the marketing strategies and the purchase decisions. The GLM results help explain the importance and influence those factors exert on the consumer's behavior.

The results are as presented in Table III Summary of Dependent Variables (with F and Sig values) (Gafurdjan, 2024) that findings point to the statistical significance of the factors we proposed. The strong F-values and low significance levels further justify that an AI driven alternative is capable of impacting the purchasing behavior.

TABLE III SUMMARY OF DEPENDENT VARIABLES (WITH F AND SIG VALUES)

Source	Product Requirement	Product Utility	Product Performance	Product Attributes
Corrected Model	F = 25.240, Sig = 0.000	F = 14.602, Sig = 0.000	F = 17.984, Sig = 0.000	F = 5.519, Sig = 0.000
Intercept	F = 130.273, Sig = 0.000	F = 26.423, Sig = 0.000	F = 121.236, Sig = 0.000	F = 153.428, Sig = 0.000
Customer Needs	F = 7.600, Sig = 0.006	F = 30.725, Sig = 0.000	F = 7.917, Sig = 0.008	F = 7.023, Sig = 0.008
Customer Experience	F = 13.016, Sig = 0.000	F = 8.117, Sig = 0.003	F = 9.993, Sig = 0.020	F = 8.651, Sig = 0.004
Price Consciousness	F = 7.324, Sig = 0.038	F = 9.779, Sig = 0.002	F = 6.031, Sig = 0.032	F = 7.488, Sig = 0.032
Quality Consciousness	F = 21.584, Sig = 0.000	F = 15.410, Sig = 0.020	F = 21.894, Sig = 0.000	F = 8.003, Sig = 0.007
Perceived Prestige	F = 9.216, Sig = 0.002	F = 8.261, Sig = 0.004	F = 9.326, Sig = 0.012	F = 8.000, Sig = 0.002

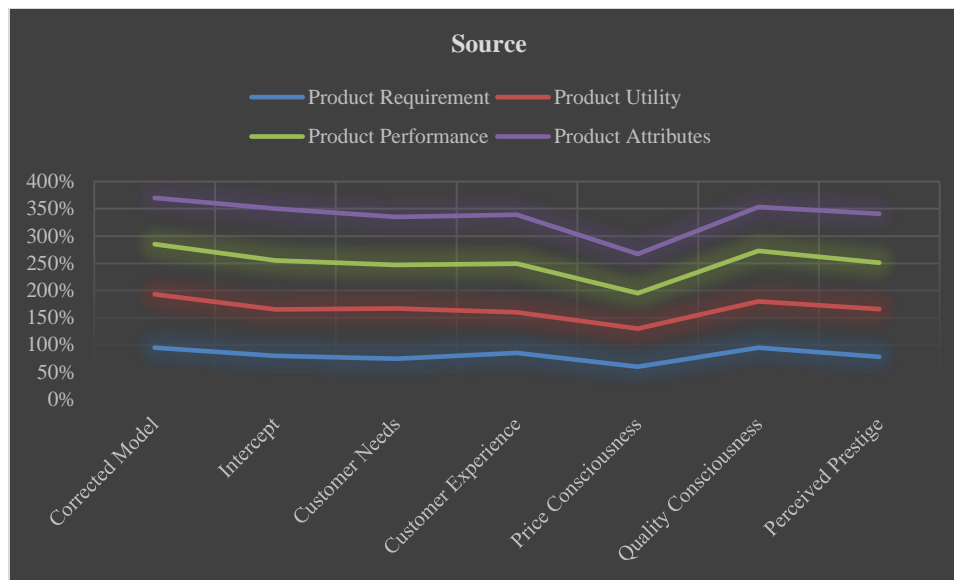


Fig. 4 Graphical Representation of Dependent Variables (with F and Sig values)

A graphical representation of dependent variables along with F and Sig values is illustrated in Fig. 4 shows Graphical Representation of Dependent Variables (with F and Sig values) (Gafurdjan, 2024), and the F values, R square values and significant p values confirm that all five factors of artificial intelligence enabled marketing strategies do have substantial effect on the four dependent factors of purchase decision process. These are the statistical findings of how AI-driven marketing has helped shape consumer behavior to a great extent. Both the confirmatory factor analysis and generalized linear model (GLM) (Yeo et al., 2022) results are used to validate the research hypotheses, and hypotheses one, two, and three are accepted based on both. Fig. 4 further illustrates these relationships visually and verifies the efficiency of AI-powered marketing strategies in determining customers' purchase decisions. The implication of these insights for the adoption of AI in a business's marketing process is something valuable.

VIII.FINDINGS AND CONCLUSION

Artificially intelligence is a very broad phenomenon in the marketing arena particularly marketers use applications of artificial intelligence to ascertain information regarding five predominant factors customer needs, customer expectations and price consciousness. The search engines of online shoppers reveal through artificial intelligence what they need and what they are searching for with great expectation.

Customers are always focusing on their profit and getting offers in the form of price consciousness at the same time to have quality consciousness at the cheapest price. The artificial intelligence also ascertained that all the customers have a perceived prestige in purchasing a particular product and ultimately realizing the product in their lifestyle perception. This information regarding customers is collected through technologically augmented artificial intelligence and offered to the marketers to design the strategies so that they

can expand their customer base and catch hold of new customers in the online platforms.

The purchase decision process of customers generally depends upon the important requirement of the products, utility of the products, along with exceptional product attributes and expected performance. These four factors cumulatively create significant explanatory power for the purchase decision psychological process prevailing among the customers. The research concluded that there is a significant influence of customer needs, customer expectation, price consciousness, quality consciousness, and perceived prestige on the psychological effects of the purchase decision of customers. These factors motivate them to analyze the important requirements of the product, its utility, attributes, and extraordinary performance.

IX.SUGGESTIONS

The derived and extracted findings of the study ultimately lead to following innovative suggestions to the marketers and customers. Since augmented artificial intelligence can ascertain customer needs and expectations, marketers should focus more on customer expectations regarding price quality and product attributes so that they can design their strategies to offer products of the best price with the high-quality at the international level.

Online consumers can directly interact with marketers through artificial intelligence connectivity so that they can get transparent information regarding product attributes and performance. The analysis also revealed that perceived prestige and lifestyle are interconnected with each other therefore marketers can focus on advertisements about the products which are intimately related to the demographic and lifestyle of customers to motivate and impress them in future.

REFERENCES

- [1] Andriana, I., Nugraha, W., Amin, F., & Buditama, R. R. (2025, February). Purchasing decision model on make-to-order production system. In *AIP Conference Proceedings* (Vol. 3200, No. 1). AIP Publishing. <https://doi.org/10.1063/5.0255479>
- [2] Avotra, A. A. R. N., Chenyun, Y., Yongmin, W., Lijuan, Z., & Nawaz, A. (2021). Conceptualizing the state of the art of corporate social responsibility (CSR) in green construction and its nexus to sustainable development. *Frontiers in Environmental Science*, 9, 774822. <https://doi.org/10.3389/fenvs.2021.774822>
- [3] Bandi, A., Adapa, P. V. S. R., & Kuchi, Y. E. V. P. K. (2023). The power of generative ai: A review of requirements, models, input-output formats, evaluation metrics, and challenges. *Future Internet*, 15(8), 260. <https://doi.org/10.3390/fi15080260>
- [4] Bhatnagar, P., & Rajesh, A. (2024). Artificial intelligence features and expectation confirmation theory in digital banking apps: Gen Y and Z perspective. *Management Decision*. <https://doi.org/10.1108/MD-07-2023-1145>
- [5] Chandra, S., Verma, S., Lim, W. M., Kumar, S., & Donthu, N. (2022). Personalization in personalized marketing: Trends and ways forward. *Psychology & Marketing*, 39(8), 1529-1562. <https://doi.org/10.1002/mar.21670>
- [6] Ciasullo, M. V., Lim, W. M., Manesh, M. F., & Palumbo, R. (2022). The patient as a prosumer of healthcare: insights from a bibliometric-interpretive review. *Journal of Health Organization and Management*, 36(9), 133-157. <https://doi.org/10.1108/JHOM-11-2021-0401>
- [7] Dasuki, N. M., Yu, Y. X., Siman, A., Yasin, N. I., & Romli, F. I. (2025). Medical insurance: Factor influencing medical insurance purchase decisions among Malaysians. *Multidisciplinary Science Journal*, 7(4), 2025160-2025160. <https://doi.org/10.31893/multiscience.2025160>
- [8] Dias, A., Sousa, B., Santos, V., Ramos, P., & Madeira, A. (2023). Wine tourism and sustainability awareness: A consumer behavior perspective. *Sustainability*, 15(6), 5182. <https://doi.org/10.3390/su15065182>
- [9] Donkor, K., & Zhao, Z. (2024). The Impact of Digital Transformation on Business Models: A Study of Industry Disruption. *Global Perspectives in Management*, 2(3), 1-12.
- [10] Gafurdjan, Z. (2024). Inflation and its effects on consumer behavior and economic policies. *Qo 'Qon Universiteti Xabarnomasi*, 10, 3-6. <https://doi.org/10.54613/ku.v10i10.895>
- [11] Glickman, M., & Zhang, Y. (2024). AI and generative AI for research discovery and summarization. *Harvard Data Science Review*, 6, 1-34.
- [12] Gupta, P., Ding, B., Guan, C., & Ding, D. (2024). Generative AI: A systematic review using topic modelling techniques. *Data and Information Management*, 8(2), 100066. <https://doi.org/10.1016/j.dim.2024.100066>
- [13] Huang, M. H., & Rust, R. T. (2021). A strategic framework for artificial intelligence in marketing. *Journal of the academy of marketing science*, 49, 30-50. <https://doi.org/10.1007/s11747-020-00749-9>
- [14] Ismail, W. S., Ghareeb, M. M., & Youssry, H. (2024). Enhancing Customer Experience through Sentiment Analysis and Natural Language Processing in E-commerce. *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications*, 15(3), 60-72. <https://doi.org/10.58346/JOWUA.2024.I3.005>
- [15] Kadhim, A. A., Mohammed, S. J., & Al-Gayem, Q. (2023). Digital Video Broadcasting T2 Lite Performance Evaluation Based on Rotated Constellation Rates. *Journal of Internet Services and Information Security*, 13(4), 127-137. <https://doi.org/10.58346/JISIS.2023.I4.009>
- [16] Kannammal, K. E., Avanthika, A., Dhanushwaran, A. J., Agalya, S., & Muneeshwaran, M. (2023). Protein Function Prediction. *International Journal of Advances in Engineering and Emerging Technology*, 14(2), 23-31.
- [17] Lim, W. M., Rasul, T., Kumar, S., & Ala, M. (2022). Past, present, and future of customer engagement. *Journal of business research*, 140, 439-458. <https://doi.org/10.1016/j.jbusres.2021.11.014>
- [18] Mahoney, L. M., & Tang, T. (2024). *Strategic social media: From marketing to social change*. John Wiley & Sons.
- [19] Naz, H., & Kashif, M. (2025). Artificial intelligence and predictive marketing: an ethical framework from managers' perspective. *Spanish Journal of Marketing-ESIC*, 29(1), 22-45. <https://doi.org/10.1108/SJME-06-2023-0154>
- [20] Perov, V., & Perova, N. (2024, May). AI Hallucinations: Is "Artificial Evil" Possible? In *2024 IEEE Ural-Siberian Conference on Biomedical Engineering, Radioelectronics and Information Technology (USBREIT)* (pp. 114-117). IEEE. <https://doi.org/10.1109/USBREIT61901.2024.10584048>
- [21] Sama, R. (2019). Impact of media advertisements on consumer behaviour. *Journal of Creative Communications*, 14(1), 54-68. <https://doi.org/10.1177/0973258618822624>
- [22] Sobha Rani, J. (2019). A Study on Marketing Strategy for Library Resources and Services with Special Reference to Sree Vidyanikethan Engineering College, Tirupati, Andhra Pradesh. *Indian Journal of Information Sources and Services*, 9(S1), 51-56. <https://doi.org/10.51983/ijiss.2019.9.S1.564>
- [23] Staniewski, M., & Awruk, K. (2022). The influence of Instagram on mental well-being and purchasing decisions in a pandemic. *Technological Forecasting and Social Change*, 174, 121287. <https://doi.org/10.1016/j.techfore.2021.121287>
- [24] Yeo, S. F., Tan, C. L., Kumar, A., Tan, K. H., & Wong, J. K. (2022). Investigating the impact of AI-powered technologies on Instagrammers' purchase decisions in digitalization era-A study of the fashion and apparel industry. *Technological Forecasting and Social Change*, 177, 121551. <https://doi.org/10.1016/j.techfore.2022.121551>
- [25] Zhou, G., Xie, S., Hao, G., Chen, S., Huang, B., Xu, X., ... & Zhang, K. (2023). Emerging synergies in causality and deep generative models: A survey. <https://doi.org/10.48550/arXiv.2301.12351>