

ECONOMIC INDICATORS AND THEIR INFLUENCE ON CUSTOMER PERCEPTION OF ARTIFICIAL INTELLIGENCE IN TAMIL NADU RETAIL STORES

Dr. N. Esakki¹

¹Associate Professor of Economics, Ambai Arts College, Ambasamudram – Affiliated by: Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli – 627 012, Tamilnadu, India.

ABSTRACT

AI helps identify customer needs and predict churn, enabling firms to take proactive measures to retain customers and build long-term loyalty. It refers to the simulation of human intelligence processes by machines, particularly computer systems, to perform tasks such as learning, reasoning, and decision-making. The hypotheses of the study are ages of genders and their educational qualifications, income and frequency of visit stores with economic indicators. For these purpose 180 consumers of retail stores selected from Tirunelveli District of Tamilnadu using convenient sampling method. Interview schedule method is used to conduct research and to test the above hypothesis, descriptive analysis, t-test, F-test are used. The results showed that education level and frequency of store visits significantly influence respondents' perceptions of retail shopping experience variables, whereas gender and income do not show significant differences.

INTRODUCTION

In recent years, the rapid development of the digital economy has necessarily transformed the way businesses interact with consumers. The proliferation of e-commerce platforms, mobile applications, and online payment systems has generated vast volumes of consumer data, creating new opportunities for understanding and influencing purchasing behaviour. In this context, Artificial Intelligence (AI) has emerged as a powerful tool for analysing complex datasets and predicting consumer behaviour with greater accuracy and efficiency. It refers to the simulation of human intelligence processes by machines, particularly computer systems, to perform tasks such as learning, reasoning, and decision-making. In the digital marketplace, AI technologies such as natural language processing, machine learning, and predictive analytics are progressively being

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utilized to examine consumer preferences, browsing patterns, purchase histories, and feedback. These technologies enable businesses to gain deeper insights into customer needs and tailor their strategies accordingly.

STATEMENT OF THE PROBLEM

AI enables businesses to analyse large volumes of data such as purchase history, browsing patterns, and preferences. This leads to gaining deeper insights into consumer behaviour that are difficult to identify through traditional methods (Sunita, C. 2023 and Mittal, A., Chaturvedi, D. D., Chaturvedi, S., and Singh, P. K. 2024). It permits firms to deliver personalized product recommendations, offers, and advertisements (Thamma, N., Anywatnapong, W., Tunpornchai, W., & Saetang, C., 2024). This will allow businesses to respond quickly to changing consumer trends and market conditions (ElSayad, G., and Mamdouh, H., 2024). On the other hand, Excessive reliance on AI may reduce human interaction in customer service, which can negatively affect customer relationships and emotional engagement (Prasanthi, M., Sahu, S. R., Bakshi, M., Shanmugam, R., and Wable, P. M., 2024). Moreover, personalization is beneficial, excessive targeting may make customers feel uncomfortable or manipulated, reducing trust in digital platforms (Sunita, C., 2023).

HYPOTHESES

- H₁: There is a significant difference between economic indicators with ages of consumers of retail stores in Tirunelveli District.
- H₂: There is a significant difference between economic indicators with genders of consumers of retail stores in Tirunelveli District.
- H₃: There is a significant difference between economic indicators with educational qualification of consumers of retail stores in Tirunelveli District.
- H₄: There is a significant difference between economic indicators with annual income of consumers of retail stores in Tirunelveli District.
- H₅: There is a significant difference between economic indicators with frequency of visit retail stores in Tirunelveli District.

SAMPLE SELECTION

For these purpose 180 consumers of retail stores selected from Tirunelveli District of Tamilnadu using convenient sampling method. Interview schedule method is used to conduct research and to test the above hypothesis, descriptive analysis, t-test, F-test are used.

TABLE 1 RELIABILITY STATISTICS

Sl.No.	Retail Shopping Experience Indicator	Cronbach's Alpha
RAI1	Personalized offers/Discounts	0.892
RAI2	Product Recommendations	0.856
RAI3	Digital Payment Suggestions	0.798
RAI4	Customer Assistance	0.882
RAI5	Price Comparisons	0.792
OVE	Overall Shopping Experience	0.874

This table explains with ‘Personalized offers/Discounts’ records 0.0.892; ‘Product Recommendations’ registered 0.856; ‘Digital Payment Suggestions’ observes 0.781; ‘Customer Assistance’ displays 0.0.882. ‘Price Comparisons’ perceived 0.792 and ‘Overall Shopping Experience’ represents 0.771 which is higher than 0.7.

RESULTS

TABLE 2 SOCIO-ECONOMIC FACTORS

Variables	Frequency	Percent
Age		
Up to 20	41	22.80
21 to 40	64	35.60
41 to 60	50	27.80
Above 60	25	13.90
Gender		

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Variables	Frequency	Percent
Female	111	61.70
Male	69	38.30
Education		
Illiterate	32	17.80
Middle School	39	21.70
Higher Secondary	34	18.90
Graduate	34	18.90
Post Graduate	41	22.80
Annual Income		
Up to 50000	17	9.40
50001 to 100000	64	35.60
100001 to 150000	43	23.90
150001 to 200000	25	13.90
Above 200000	31	17.20
Frequency of Store Visits		
Daily	35	19.40
Weekly Once	28	15.60
Weekly Twice	34	18.90
Monthly Once	38	21.10
Monthly Twice	45	25.00

The socio-economic profile of the respondents shows a diverse demographic composition. With regard to age, 35.60 percent of respondents belong to the 21–40 years age group, followed by 27.80 percent in the 41–60 years category. Respondents aged up to 20 years constitute 22.80 percent, while those above 60 years account for 13.90 percent. In terms of gender distribution, female respondents represent 61.70 percent, whereas male respondents account for 38.30 percent. Regarding educational qualification, 22.80 percent of respondents are postgraduates, followed by those who completed middle school education was 21.70 percent. Higher secondary and graduate respondents each represent 18.90 percent, while 17.80 percent of respondents are illiterate. Concerning annual income, 35.60 percent of respondents earn between ₹50,001 and ₹1, 00,000

10.48047/jocaaa.2024.33.08.442

per year, followed by 23.90 percent earning between ₹1, 00,001 and ₹1, 50,000. Respondents earning above ₹2, 00,000 accounts for 17.20 percent. With respect to the frequency of store visits, 25.00 percent of respondents visit retail stores monthly twice, followed by 21.10 percent who visit monthly once. Additionally, 19.40 percent visit daily, 18.90 percent visit weekly twice, and 15.60 percent visit weekly once.

TABLE 3 GENDER WITH RETAIL SHOPPING EXPERIENCE INDICATOR

Gender	Female	Male	t	Sig.
RAI1	3.43	3.54	0.721	0.472
RAI2	2.77	2.84	0.475	0.635
RAI3	4.08	3.94	1.236	0.219
RAI4	2.68	2.75	0.523	0.602
RAI5	4.12	3.94	1.494	0.137
OVE	17.09	17.01	0.155	0.877

This table shows in the case of RAI1, the mean score for females is 3.43 and for males are 3.54, with a t-value of 0.721 and a significance value of 0.472, indicating no significant difference between genders. Similarly, for RAI2, the mean scores are 2.77 for females and 2.84 for males, with a t-value of 0.475 and a significance value of 0.635, which is also not statistically significant. In the case of RAI3, females have a mean score of 4.08 and males 3.94, with a t-value of 1.236 and a significance value of 0.219. For RAI4, the mean scores are 2.68 for females and 2.75 for males, with a t-value of 0.523 and a significance value of 0.602. Likewise, for RAI5, the mean score for females is 4.12 and for males are 3.94, with a t-value of 1.494 and a significance value of 0.137. The OVE shows mean values of 17.09 for females and 17.01 for males, with a t-value of 0.155 and a significance value of 0.877. Since all the significance values are greater than 0.05, it can be concluded that there is no statistically significant difference between male and female respondents regarding the RAI variables and the overall evaluation.

TABLE 4 EDUCATION WITH RETAIL SHOPPING EXPERIENCE INDICATOR

Education	Illiterate	Middle School	Higher Secondary	Graduate	PG	F	Sig.
RAI1	3.09	3.31	3.53	3.68	3.71	2.656	0.035*
RAI2	2.53	2.64	2.62	3.18	3.00	3.453	0.001**
RAI3	3.75	4.00	4.18	3.97	4.20	2.184	0.073
RAI4	2.38	2.44	2.82	2.94	2.95	4.076	0.003**
RAI5	3.75	3.95	4.12	4.29	4.12	2.413	0.051
OVE	15.50	16.33	17.26	18.06	17.98	4.343	0.002**

For RAI1, the mean scores increase with education level, ranging from 3.09 for illiterate respondents to 3.71 for postgraduates. The F value of 2.656 with a significance level of 0.035 indicates a statistically significant difference among the educational groups. In the case of RAI2, the mean scores vary from 2.53 among illiterate respondents to 3.18 among graduates, and the F value of 3.453 with a significance value of 0.01 shows a significant difference across education levels. For RAI3, although the mean scores range from 3.75 to 4.20, the significance value of 0.073 is greater than 0.05, indicating that the differences are not statistically significant. Regarding RAI4, the mean values increase from 2.38 among illiterate respondents to 2.95 among postgraduates, and the F value of 4.076 with a significance value of 0.003 indicates a significant difference. For RAI5, the mean scores range from 3.75 to 4.29, with an F value of 2.413 and a significance value of 0.051, which is slightly above the 0.05 level, indicating no significant difference. Finally, the overall evaluation (OVE) shows increasing mean scores with higher education levels, from 15.50 among illiterate respondents to 18.06 among graduates and 17.98 among postgraduates. The F value of 4.343 with a significance value of 0.002 indicates a statistically significant difference among educational groups.

TABLE 5 MONTHLY INCOME WITH RETAIL SHOPPING EXPERIENCE INDICATOR

Income	Up to 50000	50001 to 100000	100001 to 150000	150001 to 200000	Above 200000	F	Sig.
RAI1	3.76	3.33	3.56	3.24	3.68	1.582	0.181

Income	Up to 50000	50001 to 100000	100001 to 150000	150001 to 200000	Above 200000	F	Sig.
RAI2	2.76	2.63	2.88	2.84	3.03	1.207	0.31
RAI3	4.24	3.95	4.02	3.96	4.13	0.714	0.584
RAI4	2.71	2.55	2.95	2.52	2.87	2.085	0.085
RAI5	4.35	3.95	4.05	4.00	4.13	0.997	0.411
OVE	17.82	16.41	17.47	16.56	17.84	1.693	0.154

For RAI1, the mean scores range from 3.24 among respondents earning ₹150001–₹200000 to 3.76 among those earning up to ₹50,000. The F value of 1.582 with a significance value of 0.181 indicates that there is no statistically significant difference among the income groups. In the case of RAI2, the mean values vary between 2.63 and 3.03 across the income categories, and the F value of 1.207 with a significance level of 0.310 also shows no significant difference. Similarly, for RAI3, the mean scores range from 3.95 to 4.24, but the significance value of 0.584 records that the differences are not statistically significant. Regarding RAI4, the mean scores vary from 2.52 to 2.95 across income groups, with an F value of 2.085 and a significance value of 0.085, which is still above the 0.05 level and therefore not statistically significant. For RAI5, the mean values range from 3.95 to 4.35 with an F value of 0.997 and a significance value of 0.411, indicating no significant difference. Finally, the overall evaluation (OVE) shows mean scores between 16.41 and 17.84 among the different income groups, with an F value of 1.693 and a significance value of 0.154, which is also not statistically significant.

**TABLE 6 FREQUENCIES OF STORE VISITS
WITH RETAIL SHOPPING EXPERIENCE INDICATOR**

Frequencies of Store Visits	Daily	Weekly Once	Weekly Twice	Monthly Once	Monthly Twice	F	Sig.
RAI1	3.69	3.86	3.41	3.39	3.18	2.824	0.026**
RAI2	3.17	2.93	2.56	2.79	2.62	2.715	0.031**
RAI3	4.20	4.07	4.15	3.92	3.87	1.516	0.052

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RAI4	2.89	2.86	2.76	2.63	2.51	1.308	0.051
RAI5	4.31	4.25	3.97	3.97	3.84	2.515	0.043**
OVE	18.26	17.96	16.85	16.71	16.02	3.219	0.014**

For RAI1, the mean scores range from 3.18 for respondents visiting stores monthly twice to 3.86 for those visiting weekly once. The F value of 2.824 with a significance value of 0.026 indicates a statistically significant difference among the groups. Similarly, RAI2 shows mean scores varying from 2.56 among respondents visiting weekly twice to 3.17 among those visiting daily, and the F value of 2.715 with a significance level of 0.031 also indicates a significant difference. For RAI3, the mean scores range from 3.87 to 4.20, but the significance value of 0.052 is slightly above the 0.05 level, suggesting that the difference is not statistically significant. In the case of RAI4, the mean values range from 2.51 to 2.89, with a significance value of 0.051, this also indicates no significant difference across the groups. For RAI5, the mean scores vary from 3.84 to 4.31, and the F value of 2.515 with a significance value of 0.043 indicates a statistically significant difference among respondents with different store visit frequencies. Finally, the overall evaluation (OVE) shows mean values ranging from 16.02 to 18.26, and the F value of 3.219 with a significance value of 0.014 indicates a significant difference among the groups.

CONCLUSION

The analysis of demographic variables reveals several insights regarding respondents' perceptions of the RAI variables. The summary of gender indicates that there is no significant difference between male and female respondents, as all significance values are greater than 0.05. This suggests that gender does not significantly influence the sample respondents. The results for education show that education level has a significant influence on certain RAI variables, particularly RAI1, RAI2, RAI4, and the OVE, as their significance values are less than 0.05. This indicates that respondents with higher educational qualifications tend to have slightly higher perceptions regarding the RAI factors. In contrast, the analysis based on annual income reveals that there is no statistically significant difference among income groups with respect to the RAI variables and overall evaluation, since all significance values exceed the 0.05 level. This implies that income level does not play a major role in shaping respondents' perceptions in this context.

10.48047/jocaaa.2024.33.08.442

Finally, the frequency of store visits shows a significant influence on RAI1, RAI2, RAI5, and the overall evaluation, as their significance values are below 0.05. This suggests that respondents who visit retail stores more frequently tend to have different perceptions and experiences compared to those who visit less often.

Overall, the findings indicate that education level and frequency of store visits significantly influence respondents' perceptions of the RAI variables, whereas gender and income do not show significant differences. These results highlight that behavioral factors such as shopping frequency and educational background may play a more important role in shaping customer perceptions in retail environments.

SELECTED BIBLIOGRAPHY

1. Singh, S., Mondal, S., Singh, L. B., Sahoo, K. K., & Das, S. (2020). An empirical evidence study of consumer perception and socioeconomic profiles for digital stores in Vietnam. *Sustainability*, 12(5), 1716.
2. Ghali, Z. (2024). Impact of socioeconomic status on customer e-loyalty under the moderating role of perceived self-efficacy. *Journal of Decision Systems*, 33(1), 53-78.
3. Priyanto, E., Saekhu, A., & Prasetyo, P. A. (2024). Analysis of Demographic and Consumer Behavior Factors on Satisfaction with AI Technology Usage in Digital Retail Using the Random Forest Algorithm. *International Journal for Applied Information Management*, 4(4), 202-216.
4. Lestari, T. O. D., & Sugiharti, E. (2024). Acceptance of Artificial Intelligence-Based Online Shopping Applications: A Combination of Artificially Intelligent Device Use Acceptance and Online Shopping Service Quality. *Journal of Advances in Information Systems and Technology*, 6(1), 62-86.
5. Salem, S. A. S., & Elkhattat, D. (2024). Consumers' Motivations for Using E-Retail Applications Supported by AI Technologies and Their Impact on Their Purchasing Intentions: A Survey Study on a Sample of Consumers in the UAE. *Arab Media and Society*, 2024(37), 541-581.
6. Mittal, A., Chaturvedi, D. D., Chaturvedi, S., & Singh, P. K. (2024). Impact of negative aspects of artificial intelligence on customer purchase intention: An empirical study of

10.48047/jocaaa.2024.33.08.442

online retail customers towards AI-enabled E-retail platforms. In *Demystifying the dark side of AI in business* (pp. 159-173). IGI Global Scientific Publishing.

7. Sunita, C. (2023). Artificial intelligence in e-commerce: Exploring the purchase decisions through logistic regression analysis. *Quing: International Journal of Commerce and Management*, 3(3), 301-309.
8. Khanna, A. (2024). Exploring Customer Experience using Artificial Intelligence in Retail Businesses: A Technology Acceptance Model Approach. *International Journal of Business Analytics & Intelligence (IJBAI)*, 12(2).
9. Rafi, A. H. (2023). The Impact of Artificial Intelligence on Customer Experience in E-commerce Platforms. *International Journal of Technology, Management and Humanities*, 9(04), 118-136.
10. Vij, A., Vij, M., Farouk, M., & Kumar, P. (2024, February). Evaluating the effectiveness of AI-integrated digital marketing on consumer behavior, brand perception, and sales performance. In *2024 2nd International Conference on Cyber Resilience (ICCR)* (pp. 1-6). IEEE.
11. Thamma, N., Anywatnapong, W., Tunpornchai, W., & Saetang, C. (2024). Transforming e-commerce: Artificial intelligence effect on purchase decision and happiness. *PSAKU International Journal of Interdisciplinary Research* (forthcoming), Asian Administration and Management Review, 7(1).
12. Papia, S. K., Jahan, I., Islam, A., Akhir, A., & Rahman, F. (2023). Leveraging artificial intelligence to analyse and predict consumer behaviour in the digital marketplace. *Business and Social Sciences*, 1(1), 1-7.
13. ElSayed, G., & Mamdouh, H. (2024). Are young adult consumers ready to be intelligent shoppers? The importance of perceived trust and the usefulness of AI-powered retail platforms in shaping purchase intention. *Young Consumers*, 25(6), 969-989.
14. Prasanthi, M., Sahu, S. R., Bakshi, M., Shanmugam, R., & Wable, P. M. (2024). Personalized Marketing in the Digital Age: The Role of AI in Consumer Behavior Analytics. *Library of Progress-Library Science, Information Technology & Computer*, 44(3).