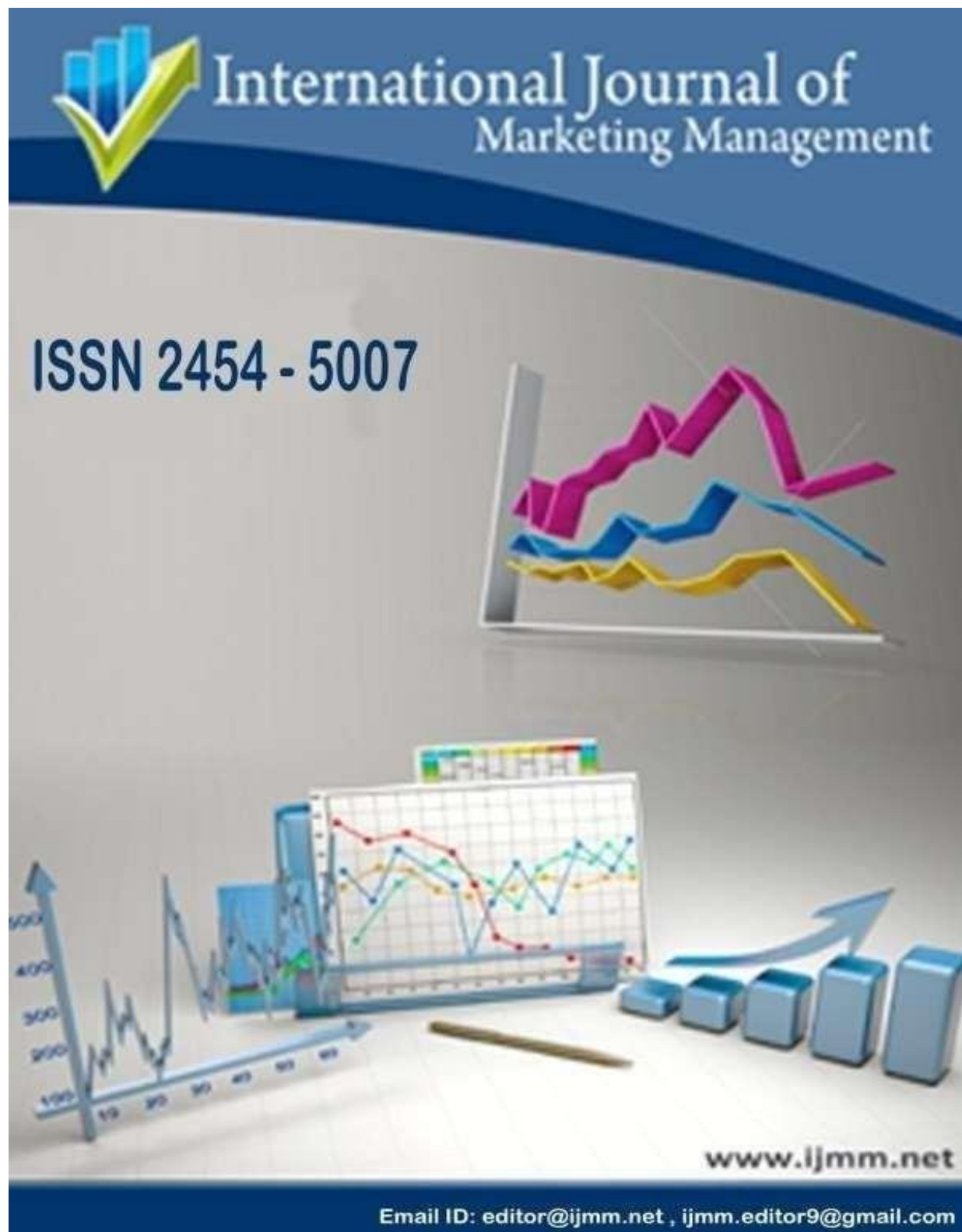




THE ROLE OF DIGITAL TWIN TECHNOLOGY IN TRANSFORMING CONSUMER LIFESTYLES THROUGH GROCERY APPS

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ABSTRACT

The growing influence of digital transformation in the retail sector has redefined consumer experiences, particularly within grocery-based applications. This study, titled “The Role of Digital Twin Technology in Transforming Consumer Lifestyles through Grocery Apps,” explores how Digital Twin (DT) technology integrates real-time data, simulation, and personalization to enhance consumer lifestyles. Data were collected from 253 respondents in Coimbatore City to examine consumer awareness, adoption factors, and lifestyle changes brought about by DT-enabled grocery platforms such as Zepto, Blinkit, BigBasket, and Instamart. Using SPSS software, statistical tools including percentage analysis, Chi-square, ANOVA, Friedman Ranking Test, and t-test were employed to analyse the data. The findings reveal that digital twin-enabled grocery apps significantly improve personalization, time management, convenience, and sustainability in daily life. Furthermore, consumers perceive DT technology as a powerful innovation that enhances decision-making and promotes smarter

consumption habits. This study contributes valuable insights for retailers and developers to optimise grocery applications for greater engagement, trust, and lifestyle transformation.

Keywords

Digital Twin Technology, Grocery Applications, Consumer Lifestyle, Personalisation, Digital Transformation.

Introduction

Digital Twin (DT) technology has emerged as one of the most innovative tools transforming the way consumers interact with digital platforms in today’s technology-driven era. As grocery applications become an essential part of everyday life, the integration of DT technology enables real-time data monitoring, simulation, and personalised experiences that enhance convenience and lifestyle quality. With consumers increasingly depending on online grocery platforms such as Zepto, Blinkit, BigBasket, and Instamart, understanding the role of DT in shaping their purchasing behaviour and daily routines has become crucial. This study examines how digital twin-enabled grocery apps influence consumer lifestyles by improving

decision-making, promoting sustainable consumption, and personalising shopping experiences.

OBJECTIVE

- To identify the key factors that influence consumer adoption of digital twin technology in the context of glossary-based apps.
- To examine the common challenges consumers, face while engaging with digital twin-based solutions in glossary-based applications.

METHODOLOGY

Consumers in Coimbatore who use grocery-based applications such as Zepto, Blinkit, BigBasket, and Instamart have provided the primary data. Research journals, books, and various online sources related to Digital Twin technology and consumer lifestyle studies have provided the secondary data.

Tools Used

A basic table has been created by compiling and organizing the collected primary data. The primary data for this study were gathered using a structured questionnaire designed to understand consumer awareness and perceptions of digital twin technology in grocery applications. The data presented in the table have been carefully analyzed using suitable statistical techniques. The following tools have been used to explore the data and achieve the objectives of the study:

- Simple Percentage Analysis
- ANOVA

Sample Size

The study's respondents were 253 consumers.

REVIEW OF LITERATURE

Research on “Digital Twin Applications in the Food Industry: A Review” was conducted by Abdurrahman A. and Ferrari L. (2025) [1]. This study identified how Digital Twin (DT) technology is applied within the food and grocery sectors to enhance efficiency and quality. The research focused on the integration of DT in food processing and examined its potential to improve consumer-oriented services. The findings revealed that while digital twins have significantly improved safety and productivity in the food industry, their direct role in influencing consumer lifestyles through grocery applications remains a growing area of research.

The study “Digital Twin Technology in Retail: Improving Consumer Experiences” was done by Kaur R. and Singh A. (2023) [2]. The objective was to analyse how DT technology enhances personalisation and consumer satisfaction in the retail sector. The researchers used qualitative methods and selected retail organizations that have adopted DT models. The study concluded that digital twins improve the customer experience by simulating consumer preferences, optimising store layouts, and supporting predictive inventory management, thereby

reshaping consumer lifestyle and shopping behaviour.

Research on “Consumer Behaviour in the Age of Digital Twins” was conducted by Kim J. and Lee H. (2020) [3]. This study explored how digital twin technology influences consumer interaction within virtual shopping environments. Both experimental and survey-based data were used to understand consumer preparedness for digital twin-enabled platforms. The study revealed that DTs provide immersive, personalised, and efficient shopping experiences, resulting in better decision-making and time management for consumers.

ANALYSIS AND INTERPRETATION

Simple Percentage Analysis

Simple percentage analysis involves dividing a specific value by the total number of responses and multiplying the result by 100 to obtain a percentage. It is a method used to represent data in a clear and comparable form, showing the proportion or distribution of respondents for each category. In this study, simple percentage analysis is used to understand consumer awareness, preferences, and opinions regarding the role of Digital Twin technology in grocery-based applications such as Zepto, Blinkit, BigBasket, and Instamart. This analysis helps identify patterns and trends in how consumers perceive personalisation, convenience, and lifestyle transformation brought about by digital twin-enabled features.

TABLE 1: AGE GROUP

Age Group	No. Of Respondents	Percent
Below 18 Years	26	10.3
18-24 Years	174	68.8
25-34 Years	39	15.4
35-44 Years	9	3.6
Above 45 Years	5	2.0
Total	253	100.0

Interpretation

The age group of the respondents who participated in the study on the role of Digital Twin technology in transforming consumer lifestyles through grocery apps is presented in Table 1. According to the data, 68.8 percent of the respondents belong to the age group of 18–24 years, followed by 15.4 percent in the

25–34 years category and 10.3 percent below 18 years. A smaller proportion of respondents fall under the age groups of 35–44 years and above 45 years. Hence, it can be inferred that the majority of respondents are young adults between 18 and 24 years, indicating that this age group is more active in using grocery-based applications integrated with Digital Twin technology.

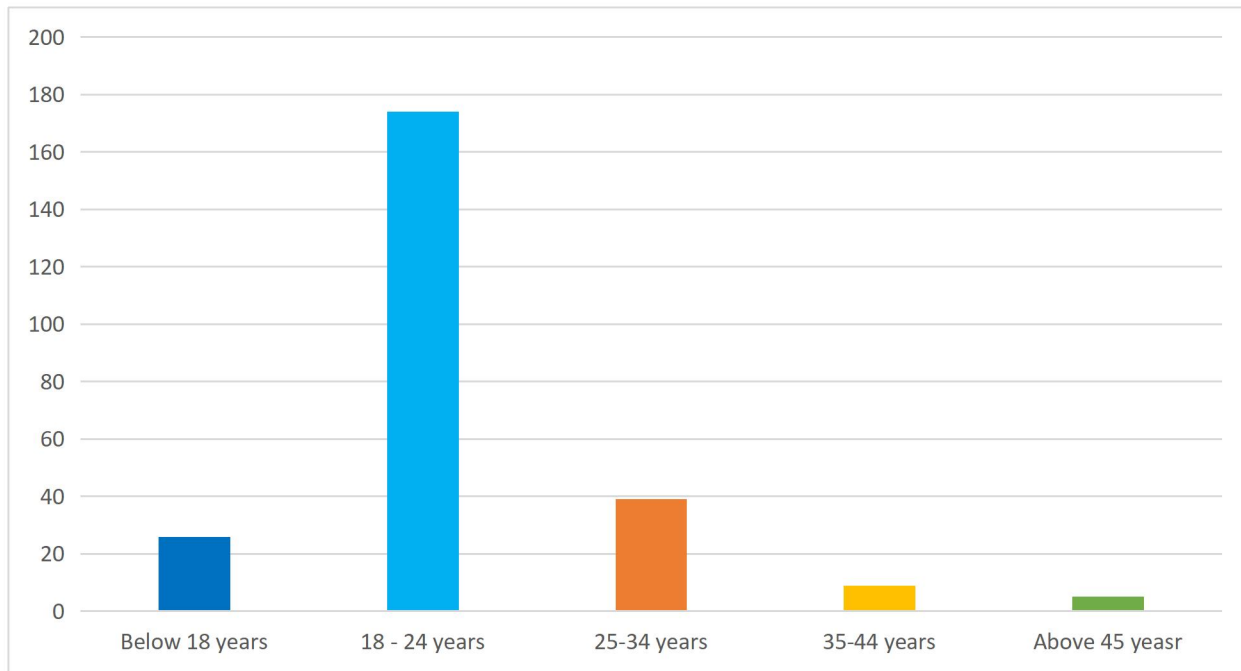


Figure 1: Pie chart of Age Group

ANOVA

ANOVA, or Analysis of Variance, is a statistical tool used to determine whether there is a significant difference between the means of three or more groups. In this study, ANOVA is applied to analyze how different demographic factors such as age, gender, and educational qualification influence consumers' awareness and adoption of digital twin features in grocery applications. This method helps to identify whether consumer lifestyle changes—like convenience, time management, and personalization—vary among different user groups. By comparing group averages, ANOVA provides insights into how digital twin technology impacts various sections of consumers, ensuring that the observed differences are statistically meaningful and not due to random chance.

TABLE2: Key factors of driving adoption of online grocery service

Demographic profiles	Group	Agreeability Score of Respondents towards the Role of Digital Twin in Influencing Consumer Lifestyles across Grocery-Based Applications					
		N	Mean	SD	F-value	Sig.value	S/NS
Gender	Male	108	2.2566	.76863	3.318	.070	NS
	Female	145	2.4187	.64454			
Age	Below 18 years	26	2.6319	.63525	1.546	.189	NS
	18-24 years	174	2.3161	.70231			
	25-34 years	39	2.3773	.68393			
	35-44 years	9	2.0635	.93162			
	Above 45 years	5	2.3429	.61112			
Educational Qualification	Less than SSLC	3	2.1429	1.30931	.200	.938	NS
	SSLC	8	2.2500	.53860			
	HSE	21	2.4150	.65762			
	Under Graduate	179	2.3392	.71315			
	Post Graduate	42	2.3946	.69185			
Residential Area	Urban	139	2.2847	.75798	1.320	.269	NS
	Semi-Urban	56	2.4209	.63504			
	Rural	58	2.4360	.61977			

Interpretation

The ANOVA results presented in the above table show the agreeability score of respondents towards the role of Digital Twin technology in influencing consumer lifestyles across grocery-based applications. The results

indicate that there is no significant difference among the respondents based on gender, age, educational qualification, or residential area, as all significance values are greater than 0.05. This means that consumers, irrespective of their

demographic profile, share a similar level of agreement about how Digital Twin technology impacts their lifestyle. The overall mean scores suggest that both male and female users, as well as respondents from different age and educational groups, moderately agree that digital twin features—such as personalization, real-time tracking, and smart recommendations—enhance convenience and decision-making in grocery apps. Therefore, it can be concluded that Digital Twin technology has a positive influence on consumer lifestyles, but this perception remains consistent across different demographic categories.

FINDINGS

Simple Percentage Analysis

- A simple percentage analysis shows that most respondents actively use grocery-based applications such as Zepto, Blinkit, BigBasket, and Instamart. This indicates that consumers are increasingly aware of Digital Twin technology and consider it an important aspect of modern grocery shopping, offering speed, personalization, and convenience. The results also show that a majority of respondents prefer apps that provide real-time updates, tracking, and personalized recommendations, highlighting the positive influence of Digital Twin features on consumer behavior.

ANOVA

- According to the ANOVA results, there is no significant difference among demographic groups such as gender, age, educational qualification, and residential area in their opinions about the role of Digital Twin technology in grocery applications. This means that consumers across all backgrounds equally agree that Digital Twin features improve convenience, time management, and overall shopping experiences. The mean values suggest that all users, regardless of their demographic profile, recognize the benefits of Digital Twin-enabled grocery apps in making their lifestyles more efficient and organized.

SUGGESTIONS

- Grocery app developers should conduct awareness programs to educate consumers about the uses and benefits of Digital Twin technology in grocery applications.
- To strengthen consumer trust, companies should focus on data protection, transparency, and privacy policies related to digital technologies.
- Grocery platforms should design user-friendly interfaces and offer multi-language support to make

- Digital Twin features more accessible to users in rural and semi-urban areas. Regular user feedback and app updates should be implemented to improve personalization and enhance customer satisfaction.
- Collaboration with technology partners can help in developing AI-based Digital Twin systems that promote healthy, sustainable, and time-efficient shopping habits.

CONCLUSION

The study clearly demonstrates that Digital Twin technology plays a vital role in transforming consumer lifestyles through grocery-based applications. The ANOVA analysis reveals no significant differences among demographic groups, indicating that consumers from all categories share a positive perception of Digital Twin-enabled grocery apps. Features such as real-time tracking, predictive suggestions, and personalized recommendations make grocery shopping faster, easier, and more efficient. Overall, this study provides valuable insights into how Digital Twin technology can enhance customer satisfaction, promote smarter

consumption, and contribute to a modern, technology-driven lifestyle in today's quick-commerce environment.

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