JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Harnessing AI for Effective FMCG Marketing Strategies: Insights from Malenadu Region of Karnataka

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Abstract

Recent advancements in Artificial Intelligence (AI), combined with Neuro-Intelligence (NI), have enabled the development of innovative forms of collaboration, offering a significant competitive advantage and enhancing the routine operations of retailers. These technologies facilitate the provision of brand services and the creation of novel interactions with both customers and employees. This emerging synergy is also instrumental in detecting early warning signs and predicting potential brand crises. Analysis reveals that the integration of neuromarketing and AI allows marketers to transform marketing strategies, while AI specifically assists retailers in addressing complex marketing challenges within the FMCG sector—findings supported by factor analysis and hypothesis testing. AI is driving a revolution in marketing by increasing personalization and productivity. However, it remains essential to adopt a comprehensive approach that preserves human creativity and emotional engagement while leveraging AI capabilities. Hence the study has undertaken in the context to examine how marketers can leverage artificial intelligence (AI) to address complex marketing challenges specific to FMCG products in the malenudu region of Karnataka

Keywords; Artificial intelligence (AI) in Marketing, Neuro-Intelligence (NI), Neuro Marketing, Sensor Marketing.

Introduction

AI-powered neuromarketing enables marketers to gain deep insights into consumer emotions and subconscious behavior, allowing campaigns to be analyzed and customized in real time, thereby enhancing engagement and advertising effectiveness. Despite its potential to interpret subconscious responses and detect negative sentiment trends, the integration of AI tools with neuromarketing in brand crisis management remains limited and underexplored. Neuromarketing emerged in the early 2000s as a field focused on understanding consumer choices and responses to marketing through both emotional and cognitive processes. Drawing on insights from psychology and neuroscience, this discipline investigates how the brain reacts to marketing stimuli, including product placement, branding, packaging, pricing, and advertisements. Artificial intelligence (AI) contributes to enhanced productivity, improved decision-making, and overall skill development, underscoring its importance for career success in an AI-driven workforce (Pamela Cordova, 2024). As an advanced tool for extracting meaningful insights from large-scale data, AI enables marketers to leverage findings from neuromarketing to design highly customized programs with unprecedented precision and effectiveness (Anupama, T., & Rosita, S., 2024). However, the rapid evolution of AI systems capable of collecting and analyzing vast datasets to predict user behavior and emotions has also posed challenges to the stability of traditional legal classifications (L. Sposini, 2024).

Objective of the study

1. To examine how AI can help marketers address complex FMCG marketing challenges in the Malenadu region of Karnataka

Review of Literature

Although artificial emotional intelligence holds significant promise for automatically generating valuable consumer insights and enhancing digital experiences, persistent research challenges call for further investigation through carefully designed studies and interdisciplinary collaboration (Gupta & Bansal, 2023). AI-generated content may lead to reduced sympathetic responses from customers and lower intentions to donate, mediated through emotional and guilt-based perception pathways (Arango, Singaraju, & Niininen, 2023). By identifying and categorizing individuals based on their emotional and cognitive traits, AI creates targeted consumer profiles. Advertising messages are then tailored using these profiles, with text, music, and imagery adapted in real time through persuasive frameworks, graphic generators, and natural language algorithms to match the user's current mood (Nozari, 2025). Furthermore, AI influences brand perception, enhances the emotional impact of AI-driven storytelling, and drives digital innovation in brand narratives, while also raising ethical considerations in advertising. The analysis of large consumer datasets through AI provides actionable insights into preferences and behavior, enabling brands to refine their storytelling strategies and engage audiences more effectively by understanding their emotions and responses (Aarzoo, 2024).

The impact of artificial intelligence (AI) on advertising has garnered increasing global attention. By aligning messages precisely with individual consumer needs, AI enhances the recognition of psychological factors influencing customer behavior. AI-powered brand advertisements must continuously update their understanding of the psychological processes driving consumer actions (Metin Argan, 2022). Moreover, integrating neuromarketing with AI enables the creation of highly effective advertising campaigns that influence purchasing decisions through personalization rather than standardization. When combined with traditional marketing research, AI in neuromarketing offers a deeper understanding of consumer behavior toward branding, advertisements, and overall product or service perception. It also facilitates more objective judgments and conclusions by minimizing bias (Bansal & Gupta, 2023). Consequently, AI-generated advertising content often outperforms human-created content in terms of consumer engagement and purchase behavior. Its ability to produce inventive and well-balanced ad combinations has been shown to boost sales, while also providing significant time and cost efficiencies (Ratta, Muneer, & Hassan, 2023).

Research Design

The study adopts a conceptual and exploratory research design, incorporating both qualitative and quantitative methods for data collection. Qualitative data were gathered from research literature published between 2022 and 2025, accessed through databases such as EBSCO, J-Gate, ResearchGate, and Google Scholar. Quantitative data were collected using structured interviews and questionnaires to examine how AI and neuromarketing tools support retailers in managing brand crises within the selected region. The study employed convenience sampling to select accessible participants working in organized retail within the FMCG sector. The final sample consisted of 104 respondents occupying various roles across retail establishments in the Malnad region of Karnataka.

Results and Discussion

Table 01; Sampling Adequacy Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.785
Bartlett's Test of Sphericity	Approx. Chi-Square	339.672
	df	45
	Sig.	.000

Source; SPSS Data Analysis

Table 1 presents the results of the sampling adequacy assessment using the KMO measure and Bartlett’s Test of Sphericity. The KMO value of 0.785 indicates that the dataset is highly suitable for factor analysis. Additionally, Bartlett’s test yielded a Chi-Square value of 339.672 with 45 degrees of freedom and a significance level of 0.000, demonstrating that the test is highly significant. These results confirm that the data are appropriate for conducting factor analysis to explore how marketers can leverage artificial intelligence (AI) to address complex marketing challenges specific to FMCG products.

Factor Analysis on explore how marketers can leverage artificial intelligence (AI) to address complex marketing challenges specific to FMCG products

Total Variance Explained							
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
• Predictive analytics for demand forecasting	3.990	39.898	39.898	3.990	39.898	39.898	3.444
• Real-time price adjustment using AI algorithms	1.325	13.248	53.147	1.325	13.248	53.147	3.118
• Personalized product recommendations	1.048	10.479	63.626	1.048	10.479	63.626	1.792
• Streamlined supply chain management	.956	9.563	73.190				
• Sentiment analysis and brand monitoring	.615	6.154	79.344				
• Analysis of in-store display effectiveness and customer interaction	.586	5.862	85.205				
• AI-powered customer query handling and faster service responses	.461	4.615	89.820				
• Optimization of product shelf life and reduction of perishable inventory losses	.429	4.288	94.108				
• Targeting based on consumer purchase history	.336	3.362	97.469				
• Detection of negative consumer emotions toward brands	.253	2.531	100.000				
Extraction Method: Principal Component Analysis.							

Source; SPSS Data Analysis

- Demand Forecasting with Predictive Analytics – Leveraging AI to forecast product demand more accurately.
- Dynamic Price Optimization – Using AI algorithms to adjust prices in real time based on demand, competitor pricing, and consumer responses.
- Personalized Consumer Recommendations – Customizing product suggestions to match individual preferences.
- AI-Enabled Supply Chain Management – Streamlining logistics and operations for greater efficiency.

- Brand Sentiment Analysis – Monitoring consumer perceptions and tracking brand reputation through AI.
- In-Store Display & Interaction Analysis – Measuring display effectiveness and evaluating customer engagement patterns.
- AI-Powered Customer Support – Enhancing service efficiency with automated query handling and faster response times.
- Shelf-Life & Inventory Optimization – Reducing perishable product losses through AI-driven management.
- Purchase History–Based Targeting – Designing offers and campaigns tailored to individual buying behavior.
- Emotion Recognition in Branding – Identifying and addressing negative consumer emotions toward brands.

Table 2 presents the Total Variance Explained from the Principal Component Analysis (PCA). In PCA, components with eigenvalues greater than 1 are retained as significant factors. The table illustrates the contribution of each component to the total variance.

Component 1: Predictive analytics for demand forecasting for the largest variance at 39.898%. Component 2: Real-time price adjustment using AI algorithms explain 13.248% of the variance. Component 3: Personalized Consumer Recommendations contributes 10.479% of the variance. Combined, these three components explain 63.626% of the total variance. Components with eigenvalues less than 1 were excluded, as they do not provide meaningful contributions to the data structure.

The analysis indicates that the primary drivers of AI application in FMCG marketing are demand forecasting, dynamic pricing, and personalized recommendations. Secondary operational and service-oriented factors are less dominant but may still contribute to overall marketing strategy and operational efficiency. Retaining only the top three components simplifies the model while capturing the majority of meaningful variance in the data.

Conclusion

This study demonstrates the transformative potential of integrating artificial intelligence (AI) and neuromarketing in the marketing strategies of FMCG retailers, particularly in the Malnad region of Karnataka. By combining qualitative insights from recent literature with quantitative data collected from 104 respondents, the research highlights how AI-powered tools—such as predictive analytics for demand forecasting, real-time price adjustments, and personalized product recommendations—can enhance decision-making, operational efficiency, and customer engagement. Factor analysis confirmed that these three applications are the most significant contributors to effective AI implementation, explaining over 63% of the variance in the dataset. The findings reveal that AI not only facilitates personalization and dynamic responses to consumer behavior but also supports

brand monitoring, sentiment analysis, and optimization of supply chain and service operations. Additionally, the integration of neuromarketing techniques provides deeper understanding of consumer emotions and subconscious behavior, allowing marketers to craft campaigns that are both effective and emotionally resonant.

Despite the advantages, the study underscores the need to balance AI-driven insights with human creativity and ethical considerations, such as data privacy and transparency. The research also identifies gaps in current applications, particularly in brand crisis management, which presents opportunities for further exploration. Overall, the study confirms that leveraging AI in conjunction with neuromarketing can revolutionize FMCG marketing strategies by improving predictive accuracy, enhancing personalization, optimizing operational efficiency, and fostering stronger emotional connections with consumers. This integrated approach offers a roadmap for retailers to achieve competitive advantage and sustainable growth in an increasingly data-driven marketplace.

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