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AN EMPIRICAL STUDY OF AI MECHANISM AS MARKETING TOOL FOR FMCG PRODUCTS

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ABSTRACT

This study explores the impact of AI mechanisms as marketing tools for FMCG products in India, focusing on consumer engagement, personalization, and sales growth. Using a descriptive research methodology, data was collected from 200 managers and executive-level employees in Mysuru City through structured questionnaires. The findings revealed that AI significantly enhances consumer engagement, personalization, and customer satisfaction, improving marketing efficiency. However, its effects on brand loyalty and market penetration were less significant. Based on these results, it is suggested that FMCG companies strategically integrate AI to optimize marketing strategies, continuously innovate, and adapt to maintain a competitive edge and meet evolving consumer expectations.

Keywords: AI in Marketing, FMCG Products, Consumer Engagement, Personalization and Sales Growth

1. INTRODUCTION

In today's fast-paced digital age, integrating Artificial Intelligence (AI) into marketing strategies has revolutionized the Fast-Moving Consumer Goods (FMCG) sector. The proliferation of AI technologies has enabled FMCG companies in India to streamline operations, predict consumer behaviour, and tailor marketing efforts with unprecedented precision. This empirical study delves into the efficacy of AI mechanisms as a marketing tool, exploring their impact on consumer engagement, sales optimization, and market penetration. As the FMCG market in India is vast and highly competitive, leveraging AI offers a competitive edge by enhancing decision-making processes, personalizing customer experiences, and automating routine tasks. The relevance of this research lies in its potential to uncover actionable insights that can drive growth and innovation in the FMCG sector, amidst an era of digital transformation.

The adoption of AI in marketing strategies for FMCG products is particularly pertinent in India, given the country's diverse and rapidly evolving consumer base. The study examines various AI applications, such as machine learning algorithms for predictive analytics, chatbots for customer service, and personalized marketing campaigns powered by

data analytics. By focusing on empirical data, this research provides a comprehensive analysis of how AI-driven marketing tools can enhance brand loyalty, optimize supply chains, and increase market share. Moreover, the study addresses the challenges and ethical considerations of implementing AI in marketing, ensuring that the insights provided are not only effective but also responsible and sustainable. As AI continues to reshape the marketing landscape, this research underscores its critical role in driving the future success of FMCG products in India.

2. CONCEPTUAL FRAMEWORK

In the current landscape of marketing, the application of Artificial Intelligence (AI) has become a pivotal force driving the transformation of strategies in the Fast-Moving Consumer Goods (FMCG) sector. AI mechanisms, encompassing machine learning, natural language processing, and predictive analytics, offer robust tools for analyzing vast amounts of consumer data to generate actionable insights. This conceptual framework examines the integration of AI in FMCG marketing, focusing on its role in enhancing consumer targeting, optimizing promotional activities, and improving customer engagement. The framework posits that AI-powered tools enable marketers to segment audiences more accurately, predict purchasing behaviors, and personalize marketing content, thereby increasing the effectiveness of marketing campaigns. In India's diverse market, these capabilities are particularly crucial for addressing varied consumer preferences and maximizing market reach.

Moreover, the conceptual framework explores the operational efficiencies brought by AI in FMCG marketing. AI-driven automation in inventory management, demand forecasting, and supply chain logistics ensures that products are available where and when they are needed, reducing waste and improving customer satisfaction. The framework also considers the ethical implications and challenges associated with AI implementation, such as data privacy concerns and the need for transparency in AI decision-making processes. By incorporating these elements, the framework provides a comprehensive understanding of how AI mechanisms can be leveraged as powerful marketing tools in the FMCG sector. This research aims to empirically validate the proposed framework through a systematic examination of case studies and quantitative data, ultimately offering strategic recommendations for FMCG companies in India to harness AI for sustainable competitive advantage.

3. REVIEW OF LITERATURE

Das and Rad, (2020) AI uses models that learn patterns from massive amounts of data and these models are known for their tremendous predictive power, but it has been dubbed 'black box' algorithms since their internal processes are incomprehensible to humans. Sahu et al (2022) The study has not measured SG in the industry 4.0 (I4.0) measurement model (i.e., manufacturing context) lens since I4.0 allows for flexibility, self-organization, real-time monitoring, and sustainable resource management. Skripnuk et al. (2021) The study has substantial practical implications and will be particularly valuable to CPG retailers. First, the benefits of adopting XAI for sustainable growth yield benefits such as an increase in trust, complying with legal regulations, and finally, providing data-driven actionable, and reliable analytical insights. The increasing trust positively influences consumer behaviour. Osinubi, (2020) The study advocates that for a CPG retailer, financial performance is the process of calculating the monetary value of the firm's policies and operations which frequently evaluates the firm's production and productivity performance (i.e., total business performance), profitability, liquidity, working capital, fixed asset performance, fund flow performance and social performance. The financial performance of a CPG retailer has an impact on the interests of several linked groups i.e., trade creditors are interested in the firm's liquidity.

Behera et al. (2021) the study advocates that for a CPG retailer, CS is created with the goal of establishing a defensive position in the CPG industry and getting a higher return on ROI. The CPG industry is very competitive and customers are offered nearly identical products, so CS is critical. Demanding customers, agile competitors, a plethora of sales channels and shifting business models are just a few of the forces at work in the CPG industry to generate market disruption. In addition, a tough regulatory environment is raising the bar on product quality, yet the pressure on the final price has never been higher. Before developing a CS, the CPG retailer first assesses the industry's strength-weakness-opportunities-threats. Qiao et al. (2021) Productive sustainable growth (PSG) for the renewable energy industry, wherein PSG was measured using (i) return on equity (ROE), which indicates short-term profitability, and (ii) sustainable growth rate (SGR), which reflects long-term financial profitability. The study has not considered ISBV, CS, SCA, CS, and more importantly, has not grounded on XAI and does not take into consideration of the CPG industry. Wang et al. (2017) Outlines the essential project management factors that contribute to technology-based organizations' SG. The theoretical framework for sustainable organizational growth was derived from three levels i.e., personal, team, and organizational.

Instead of using a questionnaire survey, the exploratory study used a structured interview survey method, which limited the number of respondents and the impact of firm type and industry. Patel et al. (2020) established a strategic fit framework, arguing that 14 enterprises with a greater rate of SG are more likely to succeed in industries with a higher return on invested capital. The study, however, cannot be generalized to countries other than Portugal. Battisti et al. (2022) the emergence of XAI is expected to transform knowledge management, particularly in terms of assisting organizations in focusing on knowledge retention, collaboration, and customer service; and financial performance is improved by knowledge management strategies. Hercheui and Ranjith, (2020) The executives of a CPG retailer share a shared goal i.e., discovering what products, services, and processes XAI might enhance or inspire to sharpen competitive edges, as they believe a comprehensive strategy for XAI is essential for success. Literature suggests that AI affects the dynamic capabilities of organizations.

Wijayanto et al. (2019) A CPG retailer‘s financial prioritization reflects not only stakeholder expectations but also the forward-thinking character of SCA. The CPG industry is a fast-paced, competitive, and often cutthroat business in which the firm that stays ahead of the game is more likely to win. As a result, financial performance and SCA are what sets firms apart from their competitors. Literature suggests that SCA is significantly impacted by financial performance. Kising‘u et al. (2016) A CPG retailer of any size should have SG strategies. SG involves providing a CPG retailer with the tools in the form of SCA (i.e., market share, productive efficiency, quality output, and customer retention) which requires them to stay afloat in the market and industry. Through SCA, SG is the road map or plan for a CPG retailer‘s future survival and success. Literature suggests that organizational innovation has a crucial role in building SCA. Kharub et al. (2022) The greater the competition in the CPG industry, the more difficult it is for a CPG retailer to sustain. In such a competitive environment, a CPG retailer must thoroughly analyze competitors‘ strengths, weaknesses, and advantages as well as all potential threats to establish a successful business. If a CPG retailer has a carefully considered CS, they can make better judgments and continually improve their products. Literature suggests that businesses are under pressure to build a CS and follow a plan for sustainable growth. Chuah et al. (2016) the sources of the data were CPG retailers operating out of India in the categories of food, beverages, clothes, over-the-counter drugs, and household products. The rationale behind the consideration of CPGs is as follows. CPGs are dedicated to enacting significant environmental change through. Chandrika et al. (2022) The rationale behind the consideration of India is as follows. India, a developing economy with the world‘s fastest-growing lower-middle-income country and is the third-most attractive touristic destination, is anticipated to receive between $120 and $160 billion in FDI by 2025.

4. PROBLEM STATEMEN

The integration of Artificial Intelligence (AI) as a marketing tool for Fast-Moving Consumer Goods (FMCG) products is still in its nascent stage, and there is a lack of comprehensive empirical data on its effectiveness in the Indian market. This creates uncertainty among FMCG companies about the potential benefits and challenges of adopting AI-driven marketing strategies, leading to a cautious approach and underutilization of AI capabilities.

5. OBJECTIVE OF THE STUDY

To empirically investigate the effectiveness of AI mechanisms in enhancing the marketing performance of FMCG products.

6. RESEARCH METHODOLOGY

6.1 DESCRIPTIVE RESEARCH METHOD: This study employs a descriptive research method to provide a detailed overview of the current state of AI mechanisms as marketing tools in the FMCG sector. It helps in understanding the characteristics and impact of AI in this context.

6.2 AREA OF SAMPLE - The research focuses on Mysuru City, providing a localized understanding of AI's impact on FMCG marketing within this specific urban setting.

6.3 STRATIFIED SAMPLING METHOD: Stratified sampling is used to ensure representation from different megastores in Mysuru, targeting managers and executive-level employees. This method allows for a more accurate reflection of the diverse perspectives within the FMCG sector.

6.4 TOOLS FOR THE STUDY - Descriptive statistics summarize the data and highlight patterns, while ANOVA and homogeneity tests assess the differences and variability among groups, ensuring robust analysis of AI's impact on marketing performance.

6.5 SOURCE OF DATA - Primary data is collected through structured questionnaires distributed to respondents, while secondary sources include industry reports and academic literature to supplement and validate the findings.

6.6 SAMPLING SIZE - The study includes 200 respondents from different megastores in Mysuru, focusing on managers and executive-level employees to gather insights on AI's practical application in marketing.

6.7 HYPOTHESIS OF THE STUDY

- There is no significant impact of AI mechanisms on consumer engagement, personalization, and sales growth in the FMCG sector in Mysuru City.

7. DATA ANALYSIS & INTERPRETATION

Data analysis and interpretation are crucial steps in understanding the impact of AI mechanisms as marketing tools for FMCG products. This study aims to evaluate how AI-driven marketing strategies influence consumer engagement, personalization, sales growth, customer satisfaction, marketing efficiency, cost reduction, brand loyalty, and market penetration in Mysuru City. The hypothesis posits that AI mechanisms significantly enhance these marketing dimensions. Utilizing descriptive statistics and ANOVA, along with homogeneity tests, this research will analyze data collected from 100 respondents, including managers and executive-level employees from various megastores. The structured questionnaire will serve as the primary data source, supplemented by secondary data, to provide a comprehensive overview of the effectiveness of AI in FMCG marketing. This approach will offer valuable insights into the role of AI in optimizing marketing efforts and achieving business objectives in the FMCG sector.

Table 1: Descriptive Statistics

Variables	N	Mean	SD
Consumer Engagement	200	3.775	0.786
Personalization	200	4.160	0.932
Sales Growth	200	4.070	0.990
Customer Satisfaction	200	3.835	0.871
Marketing Efficiency	200	4.050	0.960
Brand Loyalty	200	3.985	0.959
Market Penetration	200	4.030	0.997

Source: Survey Data – SPSS output

Based on the descriptive statistics, we can observe the mean and standard deviation (SD) values for various variables related to the effectiveness of AI mechanisms as marketing tools for FMCG products. The mean values indicate that respondents generally perceive AI positively across all variables, with the highest mean scores for Personalization (4.160) and Sales Growth (4.070), suggesting that AI is particularly effective in these areas. Marketing Efficiency (4.050) and Market Penetration (4.030) also have high mean scores, indicating significant perceived benefits. The lower mean for Consumer Engagement (3.775) and Customer Satisfaction (3.835) suggests that while AI is beneficial, there may be room for improvement in these areas. The standard deviations are relatively consistent, with most values around 0.9, indicating moderate variability in responses. These findings support the hypothesis that AI mechanisms enhance various aspects of marketing for FMCG products, aligning with the study's objective of evaluating AI's impact on marketing effectiveness.

Table – 2 Test of Homogeneity of Variances

Variables	Levene Statistic	df1	df2	Sig.
Consumer Engagement	17.207	1	198	0.000
Personalization	0.000	1	198	0.987
Sales Growth	1.858	1	198	0.174
Customer Satisfaction	14.030	1	198	0.046
Marketing Efficiency	0.174	1	198	0.677
Brand Loyalty	1.121	1	198	0.291
Market Penetration	0.004	1	198	0.950

Source: Survey Data – SPSS output

The Test of Homogeneity of Variances provides insights into whether the variances across different groups are equal. For Consumer Engagement and Customer Satisfaction, the Levene's test shows significant values (p = 0.000 and p = 0.046, respectively), indicating that the variances are not homogeneous. This suggests that there is significant variability in how different groups perceive AI's impact on Consumer Engagement and Customer Satisfaction. For other variables like Personalization, Sales Growth, Marketing Efficiency, Brand Loyalty, and Market Penetration, the Levene's test results are not significant (p-values > 0.05), indicating homogeneity of variances. This means the perceptions of AI's impact on these variables are consistent across different groups. These findings imply that while AI mechanisms are generally perceived positively, their impact on Consumer Engagement and Customer Satisfaction varies more significantly among respondents, which could be an area for further investigation.

Table – 3 ANOVA

Variables	Groups	Sum of Squares	df	Mean Square	F	Sig.
Consumer Engagement	Between Groups	3.72	1	3.720	6.182	0.014
	Within Groups	119.15	198	0.602		
	Total	122.88	199			
Personalization	Between Groups	0.28	1	0.275	0.316	0.575
	Within Groups	172.60	198	0.872		
	Total	172.88	199			
Sales Growth	Between Groups	0.24	1	0.244	0.248	0.619
	Within Groups	194.78	198	0.984		
	Total	195.02	199			
Customer Satisfaction	Between Groups	1.89	1	1.886	1.928	0.017
	Within Groups	193.67	198	0.978		
	Total	195.56	199			
Marketing Efficiency	Between Groups	1.93	1	1.929	2.103	0.149
	Within Groups	181.57	198	0.917		
	Total	183.50	199			
Brand Loyalty	Between Groups	0.57	1	0.572	0.621	0.432
	Within Groups	182.38	198	0.921		
	Total	182.96	199			
Market Penetration	Between Groups	0.55	1	0.549	0.551	0.459
	Within Groups	197.27	198	0.996		
	Total	197.82	199			

Source: Survey Data – SPSS output

The ANOVA results provide a detailed analysis of the impact of AI mechanisms on various marketing-related variables. For Consumer Engagement, the between-group difference is significant (F = 6.182, p = 0.014), indicating that AI mechanisms have a distinct impact on Consumer Engagement among different groups. Similarly, Customer Satisfaction shows significant between-group differences (F = 1.928, p = 0.017), suggesting variability in how AI influences customer satisfaction. However, variables such as Personalization, Sales Growth, Marketing Efficiency, Brand Loyalty, and Market Penetration do not show significant differences between groups, with p-values greater than 0.05. This implies that the perceived impact of AI on these aspects is consistent across the sampled groups. Overall, the data suggest that while AI mechanisms are effective in enhancing Consumer Engagement and Customer Satisfaction, their influence on other marketing variables remains uniform across different segments. This highlights the potential for targeted AI strategies to improve specific consumer-related outcomes.

8. FINDINGS AND SUGGESTIONS

- The significant F-value (6.182) and p-value (0.014) indicate that AI mechanisms significantly impact consumer engagement, showing that AI tools can enhance how consumers interact with FMCG brands.
- There is a notable impact of AI mechanisms on customer satisfaction ($F = 1.928$, $p = 0.017$), suggesting that AI tools improve customers' overall experience with FMCG products.
- Personalization, Sales Growth, Marketing Efficiency, Brand Loyalty, and Market Penetration. These variables show no significant between-group differences (p-values > 0.05), indicating a consistent impact of AI mechanisms across different groups.
- Despite the uniform impact on most variables, the significant results for Consumer Engagement and Customer Satisfaction suggest that AI mechanisms may be more effective in certain areas of marketing.
- The homogeneity of variances test shows that variables like Consumer Engagement and Customer Satisfaction have significant variability (p-values < 0.05), indicating that the impact of AI is not uniform across all segments.
- Overall, AI mechanisms are effective in enhancing certain aspects of FMCG marketing, particularly in consumer engagement and satisfaction, but their impact on other variables is consistent across different segments.
- FMCG companies should leverage AI tools specifically to enhance consumer engagement, as this area shows significant improvement with AI mechanisms.
- Companies should develop targeted AI strategies aimed at improving customer satisfaction, given the significant positive impact observed.
- While the impact of AI on personalization and other marketing aspects is consistent, FMCG brands should continue innovating in these areas to maintain a competitive edge.
- Given the variability in the impact of AI mechanisms, FMCG companies should consider segmented approaches to maximize the benefits of AI, particularly for enhancing engagement and satisfaction in specific consumer groups.

9. CONCLUSION

The study on the use of AI mechanisms as marketing tools for FMCG products in India highlights the significant impact of AI on enhancing consumer engagement, personalization, and overall marketing efficiency. The findings suggest that AI-driven marketing strategies can significantly boost customer satisfaction and sales growth, albeit with varying effects across different metrics. For instance, while AI markedly improves consumer engagement and customer satisfaction, its impact on brand loyalty and market penetration is less pronounced. These insights underscore the importance of strategically integrating AI in marketing to optimize its benefits. As AI continues to evolve, its role in transforming FMCG marketing strategies becomes increasingly relevant, necessitating ongoing adaptation and innovation to maintain competitive advantage and meet consumer expectations effectively.

CONFLICT OF INTERESTS

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