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Influence of Artificial Intelligence Among Purchase Behaviour of Fast-Moving Consumer Goods

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Abstract: *AI has transformed the FMCG industry in recent years by increasing productivity, reimagining long-standing procedures, and creating new avenues for innovation. Artificial intelligence is changing demand forecasting and inventory control in the FMCG sector. Information conveniently gathered from the 300 fast-moving consumer products buyers in the Palakkad District sample. The study's qualitative data were rated using a five-point Rensis Likert scale. With the use of SPSS software, one-way ANOVA and the Wilcoxon Mann-Whitney U test are used for statistical studies. The present investigation aims to understand the benefits perceived by customers of fast-moving consumer goods after the implementation of AI. It's necessary to understand whether AI is effective in improving customer base for fast-moving consumer goods. The one-way ANOVA test results shows that is significant difference between levels of education and perception of consumers about Personalized Marketing and Consumer Engagement and Product Innovation and Development. The Wilcoxon Mann Whitney U test results shows that Gender has no impact on perception of consumers about benefits of AI in FMCG sector.*

Keywords: Artificial Intelligence, Fast Moving Consumer Goods, product innovation, perception

1. INTRODUCTION

AI technology is increasing efficiency and performance in businesses by automating procedures or jobs that previously needed human labour. Additionally, AI can interpret data at a scale beyond human comprehension. That ability can yield significant business advantages. Most businesses are heavily investing in data science and have given it top priority (https://www.oracle.com/in/artificial-intelligence/what-is-ai/). Artificial Intelligence (AI) has become a disruptive factor in several industries, including the fast-moving consumer goods (FMCG) industry. AI has changed the FMCG business in recent years by improving efficiency, reinventing established processes, and opening new creative opportunities. In the FMCG industry, artificial intelligence is transforming inventory control and demand forecasting. Artificial intelligence (AI) algorithms provide exceptional accuracy in predicting consumer trends, seasonal variations, and market swings due to their massive data analysis capabilities. This makes it possible for FMCG businesses to maximize their stock levels, cut down on waste, and guarantee that their products are available when and when customers need them (Temitope Oladokun, 2024). Because of shifting consumer needs and shifting market trends, the fast-moving consumer goods (FMCG) business has always been dynamic and fiercely competitive. Artificial intelligence (AI) integration has become a potent force in this environment, completely changing the way fast-moving consumer goods (FMCG) corporations approach marketing. AI is revolutionizing the FMCG industry by providing hitherto unseen chances to improve customer interaction, streamline processes, and spur corporate expansion (Kush Aggarwal, 2024). The study aims to understand the benefits they perceived by implementing AI among Fast moving consumer products..

2. REVIEW OF LITERATURE

Gattani et al. (2023) highlights advertising tactics and the strategic use of customer data while looking into the important impacts of AI-powered tools and digital marketing on consumer behavior. Through the application of advanced technology such as chatbots, sophisticated algorithms, and user behavior analysis,

companies may acquire valuable insights about their consumer base, enabling personalized and customer-focused online purchasing experiences. Combining consumer data with insights from digital initiatives, this study looks at how FMCG e-commerce customers behave when they shop online. It's interesting to note that these strategies—which are particularly apparent in social media posts and pop-up ads—enable interactive interfaces, promote increased spending in the FMCG e-commerce sector, and generate instant demands.

Kosovic & Peebo (2021)carried out research by first conducting a qualitative case study at a fast-fashion store. This study examined the crucial business choices in the supply chain that are not supported by AI. The results, which identified the assortment planning process as one of these crucial areas, served as the basis for the second section of the thesis, which examined the AI techniques employed in this process in the retail and fashion industries through a thorough literature analysis. Throughout the study, a suitable framework for organizing a static garment assortment in the fast fashion sector was devised and followed.

Tarai (2020) highlights how AI is improving the FMCG sectors and their total operational operations, which will pave the way for the profitability and sustainability of organizations. By integrating techniques of AI and Big Data Analytics, businesses can better comprehend the state of the market, meet customer requests, and increase the effectiveness of internal operations. The FMCG industries are eager to adopt AI tools and applications in order to better understand the needs of their particular customer group, provide consumable goods to satisfy customers' needs, and increase organizational efficiency by minimizing costs and maximizing profits. This is because they have access to real-time data collection and can compare it with previously accumulated data.

Nikita Duggal (2023) addresses a range of applications for machine learning. The growing need for AI and machine learning has made it necessary for firms to hire experts who have both practical expertise and in-depth understanding of these rapidly developing technologies. With the intrinsic need in mind, Simplilearn has introduced an AI and ML course with Purdue University in partnership with IBM. This course will assist you in becoming proficient in a range of industry-related skills and technologies, including advanced deep learning, speech recognition, Python, and natural language processing.

Kariman (2017) tries to deliver a better overview on both advantages and disadvantages of AI in the value creation process. To do so, it is necessary to find an answer to the question 'Does Artificial Intelligence (AI) create or destroy value in supplier customer relationship?' There are lot of opportunities but also challenges for firms and customers in the use of AI in their products and services. There is no universal solution to each service situation; it is more dependent on the individual customer. Ultimately, the customer must accept the value proposition. Therefore, AI is a perfect example of a technology that is applicable to the S-D Logic framework.

'Mitchell (2019) places developments in deep learning and neural networks in the perspective of earlier AI techniques. Although machine learning systems are developing quickly, the author contends that their applicability is currently restricted to specific fields. Furthermore, AI systems are easily tricked by hostile instances because they lack common sense. He also talks about how machine learning algorithms are getting better, how much data is available, and how processing power is getting better all the time.

3. STATEMENT OF THE PROBLEM

Artificial Intelligence (AI) can personalize marketing campaigns to each customer by examining their behavior, tastes, and purchase habits. This allows for a more focused and personal approach. This improves the consumer experience in general and boosts the efficacy of marketing campaigns, which in turn increases sales. The present investigation aims to understand the benefits perceived by customers of fast-moving consumer goods after the implementation of AI. It's necessary to understand whether AI is effective in improving customer base for fast-moving consumer goods.

4. OBJECTIVES OF THE STUDY

To understand the influence of Artificial Intelligence among purchase behaviour of consumers of Fast-Moving Goods

5. RESEARCH METHODOLOGY

Data conveniently collected through structured questionnaire prepared using google forms. Data collected from the sample of 300 consumers of fast-moving consumer goods in Palakkad District. A five-point Rensis Likert scale was used for measuring the qualitative data in the study. Statistical analyses are conducted using one way ANOVA and Wilcoxon Mann-Whitney U test with the help of SPSS software.

6. RESULTS AND DISCUSSION

TABLE 1. Demographic Profile of the Respondents

Sl. No	Demographic Profile	No of Respondents	Percentage
Gender			
1.	Male	168	56
2.	Female	132	44
	Total	**300**	**100**
Age			
1.	Less than 25 Years	36	12
2.	26 –40 Years	84	28
3.	41 – 55 Years	108	36
4.	More than 56 Years	72	24
	Total	**300**	**100**
Educational Qualification			
1.	High School	168	56
2.	Undergraduate	96	32
3.	Postgraduate	36	12
	Total	**300**	**100**

Source: Primary Data

The above table shows that 56% of respondents are male and 44% of respondents are female. 36% of respondents are between the age group of 41 and 55 years. 28% of respondents are between the age group of 26 and 40 years. 24% of respondents are more than 56 years. 56% of respondents have high school education, 32% are graduates and 12% respondents are postgraduates.

TABLE 2. One Way – ANOVA Test results of impact of Educational Qualification on Perceptions of consumers of Fast-Moving Goods about Benefits of AI

Variables		Sum of Squares	Df	Mean Square	F	Sig.
Demand Forecasting and Inventory Management	Between Groups	.609	2	.304	.186	.831
	Within Groups	487.071	297	1.640		
	Total	487.680	299			
Personalized Marketing and Consumer Engagement	Between Groups	67.909	2	33.954	28.602	.000
	Within Groups	352.571	297	1.187		
	Total	420.480	299			
Supply Chain Optimization	Between Groups	.494	2	.247	.164	.849
	Within Groups	448.786	297	1.511		
	Total	449.280	299			
Product Innovation and Development	Between Groups	11.749	2	5.874	4.490	.012
	Within Groups	388.571	297	1.308		
	Total	400.320	299			
Enhanced Customer Service through Chatbots	Between Groups	1.714	2	.857	.560	.572
	Within Groups	454.286	297	1.530		
	Total	456.000	299			

Source: Computed data using SPSS

H_0: There is no significant difference between Educational Qualification and Perceptions of consumers of Fast-Moving Goods about Benefits of AI

H_1: There is no significant difference between Educational Qualification and Perceptions of consumers of Fast-Moving Goods about Benefits of AI

The one-way ANOVA test results shows that as the p value is less than 0.05, null hypothesis has been accepted and there is significant difference between levels of education and perception of consumers about Personalized Marketing and Consumer Engagement and Product Innovation and Development.
The one-way ANOVA test results shows that as the p value is more than 0.05, null hypotheses has been rejected and there is no significant difference between levels of education and perception of consumers about other benefits of AI in FMCG sector.

TABLE 3. Wilcoxon Mann-Whitney U test to test the impact of Gender on Perceptions of consumers of Fast-Moving Goods about Benefits of AI

Test Statistics					
	Demand Forecasting and Inventory Management	Personalized Marketing and Consumer Engagement	Supply Chain Optimization	Product Innovation and Development	Enhanced Customer Service through Chatbots
Mann-Whitney U	10734.000	10914.000	10902.000	11058.000	11034.000
Wilcoxon W	19512.000	19692.000	19680.000	25254.000	25230.000
Z	-.501	-.241	-.261	-.042	-.076
Asymp. Sig. (2-tailed)	.616	.810	.794	.966	.940
a. Grouping Variable:Gender					

Source: Computed data using SPSS

H_0: There is no significant difference between Gender and Perceptions of consumers of Fast-Moving Goods about Benefits of AI
H_1: There is no significant difference between Gender and Perceptions of consumers of Fast-Moving Goods about Benefits of AI
The Wilcoxon Mann Whitney U test results shows that as the p value is more than 0.05, null hypotheses has been rejected and there is no significant difference between Gender and perception of consumers about benefits of AI in FMCG sector.

7. CONCLUSION

Businesses that deal with fast-moving consumer goods (FMCG) need to use technology like artificial intelligence to become more competitive in the market. Manufacturing sectors that specialize in consumer goods encounter difficulties in comprehending the erratic shifts in consumer preferences and tastes. To anticipate actions that would strengthen the supply chain management system, industries have allotted resources to assist in the collection, analysis, and interpretation of pertinent data. By integrating techniques of AI and Big Data Analytics, businesses can better comprehend the state of the market, meet customer requests, and increase the effectiveness of internal operations (Rahul Karan Tarai, 2020).
The present research aims to understand the influence of Artificial Intelligence among purchase behaviour of consumers of Fast-Moving Goods. The one-way ANOVA test results shows that is significant difference between levels of education and perception of consumers about Personalized Marketing and Consumer Engagement and Product Innovation and Development. The Wilcoxon Mann Whitney U test results shows that Gender has no impact on perception of consumers about benefits of AI in FMCG sector.
The study is restricted to a certain location. Thus, a larger sample size must be used for the survey in order to have a thorough insight. AI is a more comprehensive term that may be examined from the standpoints of manufacturers, suppliers, retailers, and other stakeholders in the FMCG sector. The current study helps manufacturers, suppliers, and retailers comprehend how customers view the advantages of artificial intelligence in the FMCG sector.

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