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A Study On Ai-Driven Consumer Segmentation And Social Marketing Strategies For Sustainable Water Purification Businesses In Coimbatore City

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Abstract- The study adopts a descriptive research design and is based on both primary and secondary data. Primary data was collected from 150 respondents using a structured questionnaire, while secondary data was gathered from journals, articles, and online sources. The research focuses on identifying consumer segments, analyzing the impact of AI in understanding customer preferences, and evaluating the effectiveness of social marketing strategies in influencing consumer awareness and purchasing behavior. The study adopts a descriptive research design and is based on both primary and secondary data. Primary data was collected from 150 respondents using a structured questionnaire, while secondary data was gathered from journals, articles, and online sources.

Keywords : Artificial Intelligence (AI), Consumer Segmentation, Social Marketing, Sustainable Marketing, Water Purification, Consumer Behavior, Digital Marketing, Coimbatore City.

I. INTRODUCTION

Access to safe and clean drinking water is a fundamental necessity for human health and sustainable development. In rapidly growing urban centers like Coimbatore City, increasing industrialization, population growth, and environmental degradation have significantly affected water quality. As a result, the demand for efficient and sustainable water purification solutions has risen considerably.Sustainable water purification businesses focus on delivering safe drinking water while minimizing environmental impact through eco-friendly technologies, energy efficiency, and waste reduction. However, the success of these businesses largely depends on their ability to understand consumer needs and effectively communicate the value of sustainable solutions.

II. OBJECTIVES OF THE STUDY

Primary Objective

To study the impact of AI-driven consumer segmentation and social marketing strategies on sustainable water purification businesses in Coimbatore City.

Secondary Objectives

- To identify different consumer segments based on demographic and behavioral factors
- To analyze the role of AI in understanding customer preferences
- To evaluate the effectiveness of social marketing strategies
- To assess consumer awareness regarding sustainable water purification products
- To suggest strategies for improving business performance

III. SIGNIFICANCE OF THE STUDY

This study is important as it helps sustainable water purification businesses understand consumer behavior and improve their marketing strategies using AI-driven insights. It highlights the role of advanced technologies in identifying customer needs and enhancing business performance.

The study also creates awareness among consumers about the importance of safe and sustainable water solutions. Additionally, it contributes to academic research on AI in marketing and promotes

environmentally responsible practices in society. It also provides practical suggestions for businesses to adopt effective segmentation and marketing strategies for long-term growth.

- For Businesses: Helps in adopting AI tools for better customer targeting
- For Consumers: Enhances awareness about safe and sustainable water solutions
- For Researchers: Provides insights into AI applications in marketing
- For Society: Encourages sustainable consumption and environmental protection

IV. RESEARCH METHODOLOGY RESEARCH DESIGN

The study adopts a descriptive research design, as it aims to describe and analyze consumer behavior, awareness, and the effectiveness of AI-driven consumer segmentation and social marketing strategies. This design helps in understanding patterns, preferences, and relationships among variables in a systematic manner.

Sources Of Data

The study is based on both primary and secondary data.

- Primary Data: Collected directly from respondents through a structured questionnaire to understand their preferences, awareness, and buying behavior.
- Secondary Data: Collected from journals, books, research articles, websites, and company reports related to AI, marketing, and water purification.

Sample Design

Sample design refers to the method of selecting respondents for the study.

Population

The population of the study consists of consumers in Coimbatore City who are aware of or use water purification systems.

Sample Size

The sample size for the study is 150 respondents, selected from different demographic backgrounds such as age, income, and occupation.

Sampling Method

The study uses convenience sampling, where respondents are selected based on their availability and willingness to participate. This method is suitable due to time and resource constraints.

Method Of Data Collection

The data is collected using a structured questionnaire consisting of closed-ended questions. The questionnaire is designed to gather information about consumer awareness, preferences, and behavior regarding sustainable water purification products.

Tools For Analysis

The collected data is analyzed using the following tools:

- Percentage Analysis
- Chi-Square Test
- ANOVA (Analysis of Variance)
- Charts and Graphs

V. REVIEW OF LITERATURE

- Smith (1956): Introduced the concept of market segmentation, emphasizing dividing markets into homogeneous groups for effective targeting.
- McCarthy (1960): Developed the 4Ps of marketing (Product, Price, Place, Promotion), forming the base for marketing strategies.
- Kotler (1967): Expanded marketing theory by highlighting the importance of consumer-oriented strategies and segmentation.
- Engel, Blackwell & Kollat (1968): Proposed a consumer behavior model explaining decision-making processes.
- Howard & Sheth (1969): Developed a buyer behavior model focusing on psychological and social influences.

- Wind (1978): Emphasized segmentation as a key tool for competitive advantage.

- Porter (1980): Introduced competitive strategy concepts, stressing differentiation and focus strategies.

VI. DATA ANALYSIS AND INTERPRETATION

TABLE 1.1

AGE GROUP OF THE RESPONDENTS

Age Group	Respondents	Percentage
Below 20	20	**13%**
20–29	60	**40%**
30–39	35	**23%**
40–49	20	**13%**
50+	15	**10%**
Total	**150**	**100%**

Interpretation:
Most respondents (40%) belong to the 20–29 age group. Young adults dominate the sample population. Middle-aged groups (30–39) also show notable participation. Older age groups have comparatively lower representation.

Inference:
The study is largely influenced by young consumers. Marketing strategies should target youth-oriented segments.

CHART 1.1
AGE GROUP OF THE RESPONDENTS

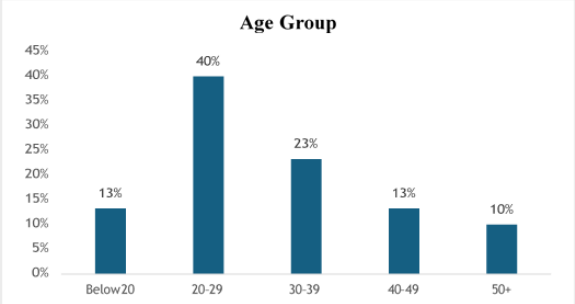


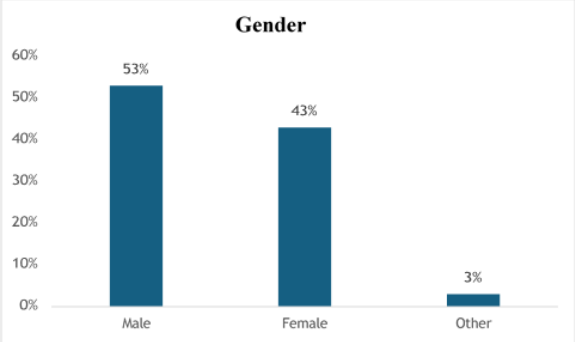
TABLE 4.1.2
GENDER OF THE RESPONDENTS

Gender	Respondents	Percentage
Male	**80**	**53%**
Female	**65**	**43%**
Other	**5**	**3%**
Total	**150**	**100%**

Interpretation:
Male respondents (53%) are slightly higher than females .Female participation is also significant (43%).Very few respondents fall under the "Other" category. The sample represents both genders fairly.

Inference:
Marketing can target both genders equally.
Slight focus on male audience may be beneficial.

CHART 1.2
GENDER OF THE RESPONDENTS



VII. FINDINGS

The study reveals that the majority of respondents belong to the 20–29 age group, indicating a youth-dominated sample with active participation from both male and female respondents. Most participants are well-educated and are either students or salaried employees, reflecting a modern and informed consumer base. A large number of respondents use water purification systems, with RO and RO+UV being the most preferred types. Social media emerges as the primary source of awareness, highlighting the importance of digital platforms in influencing consumer behavior.

The findings also indicate that awareness of eco-friendly water purification solutions is moderate, and while consumers consider sustainability, it is not always a priority. A significant proportion of respondents are aware of Artificial Intelligence and believe that AI helps in accurate consumer segmentation and personalized marketing. AI-driven advertisements and social media campaigns have a noticeable impact on consumer interest, awareness, and purchasing decisions. Online reviews and digital content further influence buying behavior.
Overall, respondents show a positive perception toward AI-based marketing strategies, with moderate trust and satisfaction levels. Many consumers are willing to switch to eco-friendly products if promoted effectively.

VIII. SUGGESTIONS

The study suggests that water purification businesses should focus on increasing awareness about eco-friendly and sustainable purification systems among consumers. Since social media plays a major role in influencing consumer behavior, companies should invest more in digital marketing and AI-driven personalized advertisements. It is also important to educate consumers about the benefits of Artificial Intelligence in improving product recommendations and decision-making. Businesses should build trust by ensuring transparency in AI-based marketing strategies and providing accurate information. Encouraging customer reviews and feedback can further enhance credibility and influence purchasing decisions. Additionally, companies should introduce affordable eco-friendly products and target non-users to expand their market reach. Continuous innovation and improvement in marketing strategies are essential to increase customer satisfaction and long-term growth.

IX. CONCLUSION

The study concludes that AI-driven consumer segmentation and social marketing strategies have a significant impact on consumer behavior in the water purification industry. Most respondents have a positive perception of AI-based marketing and recognize its effectiveness in increasing awareness, improving communication, and influencing purchase decisions. Social media and personalized advertisements are found to be key factors in engaging customers. Although awareness about eco-friendly solutions is moderate, there is a strong potential for growth if businesses focus on sustainability. The study also shows that demographic factors like age and gender do not significantly affect AI awareness, indicating that such strategies can be applied across all groups. Overall, AI-driven marketing is an effective tool for promoting sustainable water purification businesses and achieving both business success and environmental benefits.

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