Consumer Clusters and Marketing Strategies: Nutraceutical Market

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ABSTRACT

Nutraceuticals and multivitamins have become pivotal elements of preventive healthcare, profoundly shaping consumer behavior and perceptions in the evolving health and wellness landscape. This study examines the role of consumer perception, knowledge, and attitude in influencing purchasing decisions for nutraceutical products. By addressing a significant research gap, the study sheds light on the factors driving consumer behavior in this rapidly growing yet underexplored market.

The research offers unique value by investigating purchase behavior's cognitive and emotional dimensions, providing actionable insights for marketers and product developers in the health and wellness industry. Key findings highlight that consumer knowledge and positive attitudes toward product efficacy strongly predict purchase intent, while perceptions of safety and trust play a crucial role in shaping buying behavior.

This research delves into the complex dynamics of consumer decision-making in the nutraceutical sector. It employs a mixed methods approach that combines survey data with advanced clustering techniques to segment consumers based on their perceptions, decision factors, and responsiveness to advertising.

The findings underscore the intricate interplay between knowledge, trust, and product innovation in driving consumer choices. With implications for researchers, marketers, and policymakers, the study offers a comprehensive understanding of the diverse factors influencing consumer behavior in the nutraceutical market. Ultimately, this research contributes to a deeper and more nuanced understanding of the multi-dimensional relationships shaping purchasing decisions in the health and wellness industry while providing practical guidance for tailored marketing and product development strategies.

Keywords: Nutraceuticals, multivitamins, consumer attitude, perception, knowledge

Introduction

Nutraceuticals, which combine nutrition and pharmaceuticals, are gaining popularity among consumers due to their health benefits and potential to prevent diseases. Food and medications have been essential for human health (Puri et al., 2022). As per the definition of nutraceuticals, they are "any substances that may be considered as a food, or a part of a food and also provide medical or health benefits, including the prevention and treatment of any disease." On the other hand, multivitamins are defined as "food supplements designed to be taken in small-unit quantities, which are sources in concentrated forms of nutrients alone or combined to supplement the intake of vitamins and minerals from the standard diet. Considering broad definitions, they include both dietary supplements (DS) and functional foods. Nutraceuticals present a promising avenue for specific medical or health benefits. With a value of USD 4-5 billion, India's nutraceutical market is expected to lead the world. (Chopra et al., 2022)

While consumer behavior studies have explored purchasing decisions in broader contexts, there is a noticeable gap in research focusing on how perception, knowledge, and attitudes influence decisions in the nutraceutical sector (Anushka Menon et al., 2021). This lack of comprehensive insights limits the ability of industry stakeholders to address consumer needs effectively. Furthermore, the proliferation of health-related misinformation has heightened the importance of informed decision-making and trust in this sector. By examining the interplay between these cognitive and affective factors, this study aims to bridge this knowledge gap, providing a nuanced understanding of the drivers behind consumer choices. (Teoh et al., 2019). The research also explores moderating variables such as age, gender, and socioeconomic status, which may further shape the relationships between consumer perception, knowledge, and attitude in influencing buying decisions. Given the complexity of these factors, it is crucial to investigate how consumers interpret product efficacy, safety, and claims within the context of their health and wellness priorities. Such insights can help industry players develop targeted marketing strategies, foster trust, and encourage informed consumer behavior. (Jadhav et al., 2023). In addition to its academic contributions, this study has practical implications for marketers, healthcare practitioners, policymakers, and product developers. Delving into the motivations and barriers influencing nutraceutical consumption, it aims to offer actionable insights for enhancing consumer trust, promoting informed choices, and addressing public health challenges. The findings are also expected to contribute to ongoing discussions around nutrition, dietary practices, and preventive health strategies. (Laderas, 2024)

The study addresses the following research questions:

- How does consumer perception of product quality, safety, and efficacy influence buy decisions for nutraceuticals?

- What is the role of consumer knowledge about nutraceutical ingredients and health benefits in shaping purchase behavior?

- How do consumer attitudes toward health, wellness, and preventive care impact their buying decisions for nutraceuticals?

- How do perception, knowledge, and attitude affect consumer purchasing behavior in the nutraceutical market?

Addressing these issues closes a research gap, and a deeper comprehension of consumer behavior in the nutraceutical market is added, which has both academic and practical benefits.

Research Methodology

This study employs a quantitative research design with a descriptive and exploratory approach to examine the relationship between consumer perception, knowledge, and attitude and their influence on buying decisions for nutraceuticals. The research seeks to identify correlations between these variables using a structured survey instrument, allowing for a detailed exploration of the research objectives.

The research was conducted using Google Forms, circulated online into peer groups, leveraging digital platforms to access a broad and diverse group of participants. The online survey method was chosen for its ability to ensure broad geographic and demographic representation. This approach also offered the convenience of allowing respondents to complete the survey at their own pace, potentially increasing participation and response rates. Data collected in the study was from 203 participants after elimination and those who didn't meet the inclusion-exclusion criteria.

The study tool used in the process consists of dependent, independent, and demographic variables chosen based on the study's needs and the literature review. (Boccia & Punzo, 2020)

Our semi-structured primary data-based study tool focused on measuring three main variables:

- Consumer perception of nutraceutical product quality, safety, and efficacy.
- Consumer knowledge about nutraceutical ingredients, health benefits, and usage.
- Consumer attitudes toward health, wellness, and preventive care.

This research explores the dynamics of consumer perception, knowledge, and attitudes and their influence on buying behavior regarding nutraceuticals and multivitamins. The study is designed to understand how these factors influence consumer decisions while identifying the role of product quality, safety, efficacy, trust, and familiarity in influencing purchase intentions.

The objectives of the study are to:

- Investigate how consumer perceptions, knowledge levels, and attitudes impact buying behavior.
- Analyze the combined effects of these factors on decision-making.
- Examine the role of trust in product claims and brand reputation.
- Explore the moderating effects of demographic factors such as age, education, and income.
- Assess how familiarity with nutraceutical products strengthens consumer perception and attitude.

Sample

The study employs purposive sampling, targeting 203 participants who are regular users or purchasers of nutraceutical products. This sample size ensures sufficient statistical power to analyze the relationships among variables and generalize findings to a broader consumer base. Participants represent health-conscious individuals actively seeking health supplements. Data were collected through an online survey, enabling broad geographic and demographic coverage.

Statistical Analysis

This study combines descriptive analysis, correlation analysis, and clustering techniques to comprehensively address the research objectives and test the hypotheses. These methods aim to uncover the intricate relationships between key variables consumer perception, knowledge, attitude, and demographic factors—that drive the decision to purchase nutraceutical products.

While direct statistical relationships provide valuable insights, they often fail to fully capture the complex interplay of factors influencing consumer behavior. Machine learning techniques, particularly K-means clustering, are utilized to address this limitation. This method segments consumers into distinct groups based on shared characteristics, such as their perceptions of product quality, levels of knowledge about nutraceuticals, or attitudes toward health and wellness.

K-means clustering enhances the analysis by revealing patterns and trends that may not be evident through traditional methods. This approach identifies specific customer segments by grouping consumers with similar profiles, such as highly health-conscious individuals, brand-loyal buyers, or price-sensitive consumers. These insights provide a deeper understanding of consumer behavior and allow for more accurate predictions of purchasing outcomes. (Bernal et al., 2011)

This multifaceted approach ensures a robust exploration of the relationships between variables, offering actionable insights into consumer decision-making processes and paving the way for targeted strategies in the nutraceutical market. (González-Sarrías et al., 2013)

Result

The study found the frequency of nutraceutical consumption among respondents, highlighting diverse usage patterns. A significant proportion of participants consume nutraceuticals daily, with "once daily" and "occasionally" being the most common frequencies, collectively accounting for nearly half of the responses. This data indicates that while daily and occasional usage dominate, consumption habits vary based on individual preferences and needs.
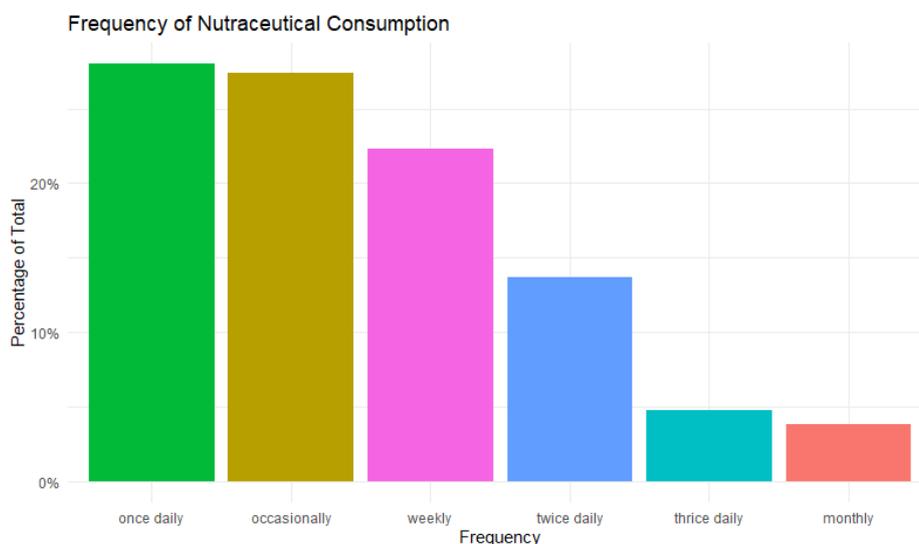

Figure 1: Nutraceutical usage pattern

Key factors influencing consumers' purchase decisions for nutraceuticals. "Recommendations from health professionals" stand out as the most influential factor, accounting for the highest

percentage, reflecting the critical role of expert advice in consumer decision-making. "Ingredients" and "brand reputation" follow, suggesting that product composition and trustworthiness significantly affect consumer choices. Comparatively, "price" and "packaging" hold lesser importance, indicating that functional and quality attributes outweigh aesthetic or cost considerations. This insight underscores the need for marketers to focus on credible endorsements and transparent product information to appeal to health-conscious consumers.
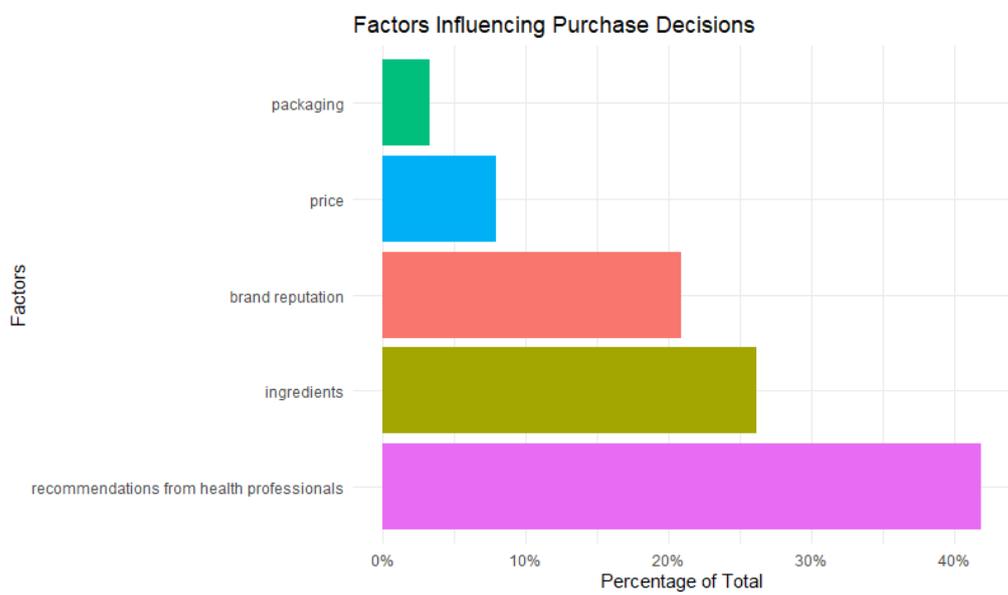
Figure 2: Reason for purchase based on weightage by consumer

Data suggested that advertisements vary in shaping how people perceive things. Around 35% of the respondents feel that ads influence their perception, indicating that a significant portion of the audience is somewhat swayed by what they see in ads. On the other hand, about 25% believe advertisements significantly influence their perceptions, suggesting a substantial impact on this group. This diverse response showcases the complexity of advertising effectiveness, where it is neither universally powerful nor completely dismissible.

The study revealed that the most trusted source appears to be healthcare professionals, with nearly 30% of respondents turning to them for information, which makes sense given their expertise in health matters. The internet follows closely, with around 25% of people using it as a go-to source, reflecting our digital age where online research is second nature. Family and friends also play a significant role, influencing about 20% of the decisions and showing the power of personal recommendations. Social media comes next, with about 15% of the total, indicating that while it's influential, it's not the primary source for many. Books, magazines, and television or radio advertisements are less popular, each hovering around 10%, suggesting that traditional media is still in the mix but not as dominant as modern sources.
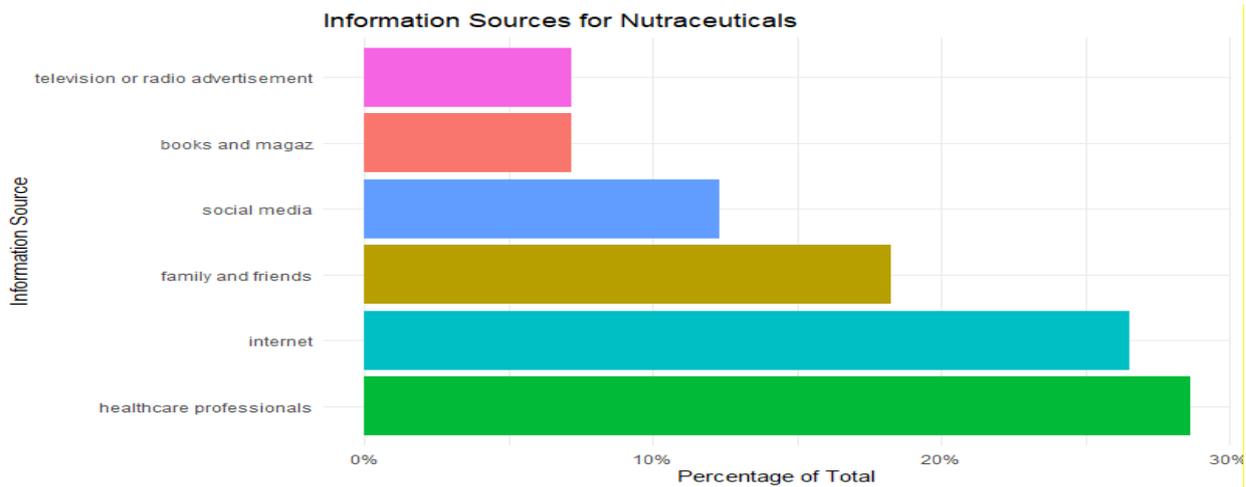
Figure 3: Source of information for the nutraceuticals

The K-means clustering analysis segmented the respondents into three distinct clusters based on their perception, decision factors, and responsiveness to advertisements for nutraceutical products. These clusters highlight unique consumer profiles and their corresponding weightage for specific decision criteria, as outlined below (Herath et al., 2008)
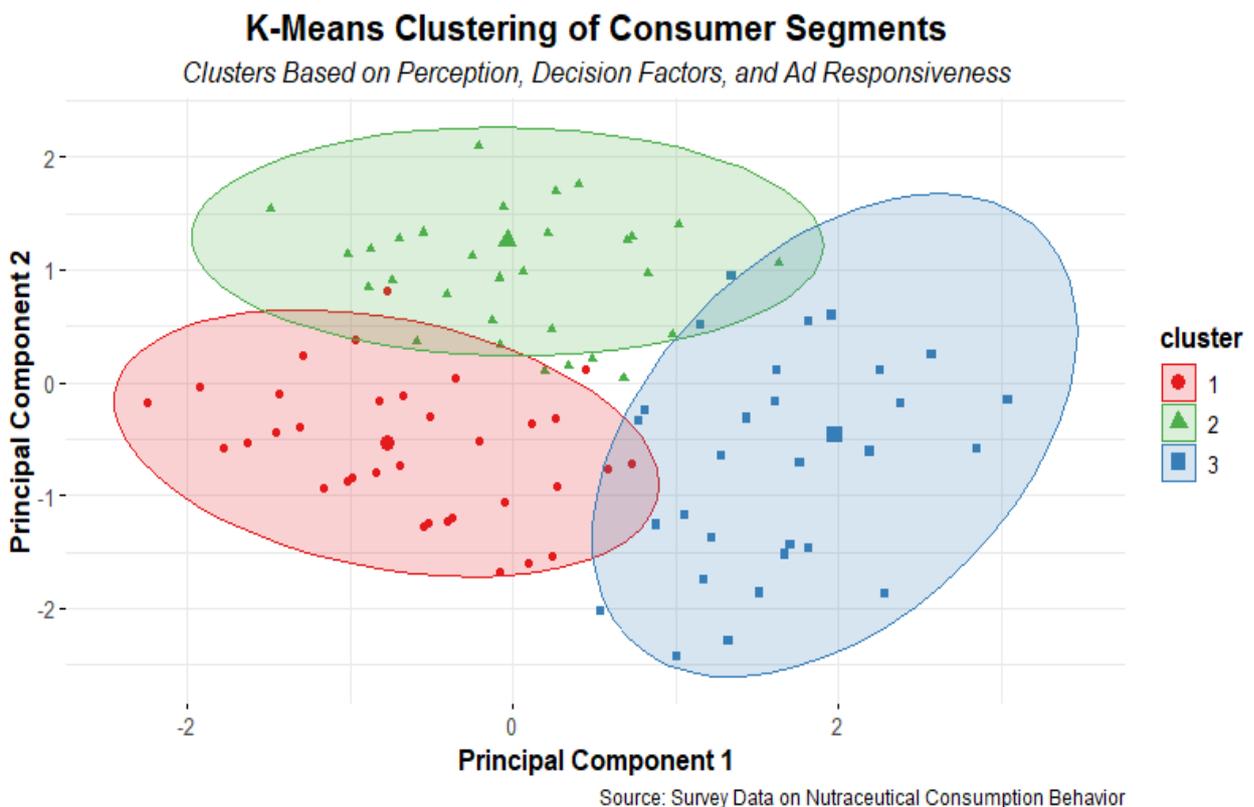

Figure 4: Segmentation of consumers based on their buying behavior and preferences

Based on the analysis, the following criteria were identified as crucial for decision-making in strategizing the targeting and marketing of consumers in the nutraceutical sector.

Table 1: Weightage for the given criteria based on cluster segment

cluster	Importance	Decision Factor	Advt. Influence	New Products
1	2	2.75	3.34	3.02
2	1.18	2.65	3.57	3.03
3	2.53	4.55	1.37	1.75

Cluster 1: Moderate Decision-Makers- Consumers in this cluster exhibit moderate importance on product selection and decision factors. They show a notable responsiveness to advertisements, indicating that marketing campaigns significantly influence their purchasing behavior. Additionally, they display moderate interest in trying new products, suggesting openness to innovation within familiar brands.

Cluster 2: Advertisement-Sensitive Buyers- This cluster is predominantly influenced by advertisements and promotional content, with the highest weightage in ad responsiveness (3.57). Despite their low emphasis on decision-making and product importance (1.18), they are inclined to explore new products (3.03). This group can be categorized as impulsive buyers driven by marketing efforts.

Cluster 3: Quality-Conscious Decision-Makers- Consumers in this cluster prioritize quality and critical decision factors, as indicated by the highest weightage in decision-making (4.55). They are less influenced by advertisements (1.37) and show limited interest in new products (1.75). This segment represents a highly discerning and quality-conscious consumer group that relies on product attributes and past experiences rather than external marketing efforts.

Cluster 1 represents a balanced approach, responsive to advertisements but not overly impulsive. Cluster 2 is heavily influenced by advertisements, making it an ideal target for promotional campaigns. Cluster 3 values product quality over advertising, requiring detailed product information and credibility.

Conclusion

The study highlights significant insights into consumer behavior and preferences regarding nutraceutical products, offering a nuanced understanding of market dynamics. The clustering analysis identified three distinct consumer segments based on decision-making factors, advertising influence, and receptiveness to new products. Segment 1, characterized by moderate decision-making and high advertising influence, indicates an audience responsive to promotional efforts. Segment 2 prioritizes innovative products, showcasing a forward-looking approach to health trends, while Segment 3 emphasizes informed decision-making through ingredient transparency and professional recommendations.

Significant marketing efforts can be achieved while using focused advertisements for Cluster 2 to drive conversions; Cluster 3 consumers can be engaged with content emphasizing quality, scientific backing, and certifications, ensuring quality and reliability to maintain the loyalty of

Cluster 3 consumers will lead to better outcomes. Clusters 1 and 2 can be targeted with innovative and new products, as they show moderate to high interest in exploring new options.

Recommendations

Our study suggests a need for tailored marketing strategies to address these diverse segments. For Segment 1, focused advertising campaigns highlighting product benefits can enhance reach and engagement. Segment 2 would benefit from the introduction of innovative formulations accompanied by detailed explanations of their advantages. Lastly, for Segment 3, building trust through transparency in ingredients and leveraging endorsements from health professionals will be critical in driving purchase decisions. Nutraceutical brands can strengthen consumer trust, expand their market base, and foster long-term loyalty by aligning product offerings and communication strategies with these distinct preferences.

Author contributions
Each author has contributed equally. All authors read and approved the final manuscript.

Conflicts of interest
The authors declare no conflict of interest.

Availability of data and material
The authors will consider sharing the dataset gathered upon receipt of reasonable requests.

Ethics approval
No ethical or institutional board review approval is required for the research paper.

Consent to participate
All participants consented to take part in this study.

Consent for publication
All authors consented to publish this manuscript.

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