
FUSION OF TRADITION AND TECHNOLOGY: AN AI-DRIVEN STUDY OF CONSUMER PERCEPTION TOWARDS AYURVEDIC PRODUCTS

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Ayurveda, an ancient system of medicine, has been utilized to address various life challenges. In the 21st century, Ayurveda continues with modifications and updates, stimulating market growth and enabling consumers to reconnect with their heritage. Ayurvedic Fast-Moving Consumer Goods (FMCG) brands have experienced substantial expansion, driven by increasing demand for natural health solutions. As the Ayurvedic product market expands, understanding consumer perceptions has become complex due to diverse attitudes influenced by cultural and health-related factors. This study investigates the convergence of traditional Ayurvedic knowledge and modern technology by using Artificial Intelligence (AI) to assess consumer attitudes toward Ayurvedic FMCG products. Using AI tools like sentiment analysis, Natural Language Processing (NLP), and machine learning, this research examines online consumer behavior and product reviews to reveal insights into consumer trust and preferences. The paper explores how AI can provide understanding of consumer sentiment across demographics and market segments. By incorporating AI insights, brands can enhance product personalization and marketing strategies. The study explores AI's role in addressing consumer skepticism about efficacy and authenticity. The findings highlight AI's potential to aid in developing innovative Ayurvedic products that align with modern health trends while maintaining Ayurveda's core values. This research offers a framework for FMCG brands to merge Ayurvedic principles with AI's technological advancements, shaping a future where tradition and technology enhance consumer experience in wellness.

Keywords— *Natural Language Processing, Ayurvedic Fast-Moving Consumer Goods, Ayurveda, Artificial Intelligence*

I. INTRODUCTION

In an age marked by swift globalization, technical advancement, and heightened health awareness, the pursuit of holistic and natural wellness has prompted a revival of old medical systems. Among these, Ayurveda, an ancient Indian medical technique, has received increased global attention. Grounded in ancient wisdom, Ayurveda has been skillfully reinterpreted and restructured to accommodate modern lives, thus connecting tradition with technology. The rising consumer inclination towards natural medicines, along with enhanced digital literacy and the accessibility of online platforms for education and commerce, has fostered an environment conducive for Ayurveda's resurgence. Concurrently, Artificial Intelligence (AI) has arisen as a revolutionary instrument adept at evaluating extensive consumer data, comprehending intricate behavioral patterns, and customizing product recommendations. The integration of Ayurveda with AI offers a distinctive potential to analyze, evaluate, and improve customer interaction with Ayurvedic products, particularly in the context of Fast-Moving customer Goods (FMCG). This chapter examines the evolving significance of Ayurveda in the 21st century, emphasizing its transition from a traditional practice to a contemporary wellness movement. It analyzes the expansion of Ayurvedic FMCG products in the market and establishes a foundation for comprehending the application of AI technologies in evaluating and shaping consumer views. This chapter seeks to establish a conceptual framework for assessing the coexistence of traditional medicinal knowledge and technology innovation in addressing the wellness needs of contemporary customers. Ayurveda, originating from the Sanskrit terms Ayus (life) and Veda (knowledge), translates to "the knowledge of life." It is among the most ancient recorded healthcare systems, with origins extending beyond 5,000 years. Traditionally, Ayurveda stressed equilibrium among the mind, body, and spirit, promoting lifestyle practices, herbal remedies, cleansing methods, and dietary guidelines customized to individual constitutions or doshas (Vata, Pitta, Kapha) (Aaker and Keller 1990).

In recent decades, Ayurveda has seen a substantial metamorphosis, transitioning from a confined practice to a progressively international health and wellness philosophy. The increasing prevalence of lifestyle diseases, heightened skepticism over chemical therapies, and growing awareness of the negative effects associated with allopathic therapy have fueled a resurgence of interest in Ayurvedic concepts. Moreover, global movements promoting organic living, plant-based diets, and holistic healing have closely coincided with Ayurveda's fundamental principles, facilitating its reintegration into contemporary lifestyles. Governments and organizations, particularly in India, have made significant efforts to advance Ayurveda via education,

regulation, and financial support. The Ministry of AYUSH in India has been instrumental in legitimizing Ayurvedic methods through research projects, institutional support, and public outreach activities. The modernization of Ayurveda has seen the creation and rapid expansion of Ayurvedic Fast-Moving Consumer Goods (FMCG). These include daily consumables, including herbal toothpaste, Ayurvedic soaps, immunity-enhancing tonics, organic juices, hair oils, supplements, and skincare items blended with Ayurvedic components and promoted through wellness-centric narratives (Gupta and Kaur (2023). The transition from clinical Ayurveda to over-the-counter items has been crucial in transforming the tradition from personalized medicine to broad consumerism. Numerous Indian brands, including Patanjali, Dabur, Himalaya, Baidyanath, and Zandu, have led this initiative by effectively merging traditional formulations with contemporary packaging, branding, and distribution techniques Shyamala (2024) . These brands have adeptly employed legacy positioning and scientific validation to secure consumer trust.

The rise in Ayurvedic FMCG popularity can be attributed to multiple socio-economic and cultural drivers:

- a) Increased health consciousness post-pandemic, where immunity-boosting and preventive care became essential.
- b) Rural-to-urban migration and global diaspora, creating markets that seek cultural continuity through traditional health products.
- c) Eco-conscious consumption, with consumers opting for products that are organic, sustainable, and cruelty-free qualities that align with Ayurvedic principles.
- d) Influencer marketing and digital storytelling, where Ayurveda is positioned not as outdated folklore but as a premium, effective wellness solution.

Furthermore, these items enjoy regulatory leniency. In contrast to prescription medications, the majority of Ayurvedic FMCG products are classified as wellness or supplement items, facilitating their marketing and distribution both nationally and internationally. This has enabled corporations to accelerate growth while preserving credibility through the citation of conventional formulations and scientific endorsements. This rapid expansion also presents obstacles like as consumer distrust, issues regarding authenticity and efficacy, and the exploitation of Ayurvedic branding without genuine commitment to traditional principles. The significant variation in product quality and information openness among companies necessitates the implementation of more sophisticated, data-driven approaches to evaluate consumer perception, trust, and satisfaction. This is when AI becomes a formidable ally. Utilizing sentiment analysis, natural language processing, and machine learning, organizations can analyze extensive product evaluations, social media remarks, and survey data to identify trends in consumer trust, brand loyalty, and perceived efficacy. These solutions give detailed insights that beyond traditional surveys, facilitating real-time feedback loops, targeted marketing, and customized product creation. As Ayurvedic FMCG firms transition from traditional to technology-integrated business models, AI evolves from an operational enhancement to a strategic imperative. It facilitates the connection between ancient wisdom and contemporary consumer behavior, ensuring that Ayurveda stays contextually pertinent, economically sustainable, and culturally significant. Artificial Intelligence is profoundly impacting customer behavior in the Ayurvedic Fast-Moving customer Goods sector in various manners:

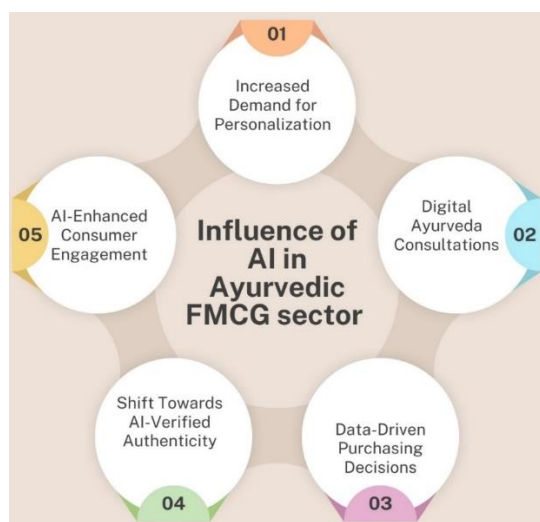


Fig. 1: Influence of AI in Ayurvedic FMCG sector

1. Increased Demand for Personalization

Consumers are now expecting customized Ayurvedic solutions based on their health profiles. AI-driven platforms analyze individual preferences, lifestyle habits, and medical history to recommend tailored herbal products.

2. Digital Ayurveda Consultations

AI-powered chatbots and virtual assistants are making Ayurveda more accessible. Consumers can now receive instant health advice and product recommendations without visiting a practitioner.

3. Data-Driven Purchasing Decisions

AI enables brands to analyze consumer sentiment and purchasing patterns. This helps companies refine their offerings, leading to more informed buying decisions by consumers.

4. Shift towards AI-Verified Authenticity

With AI ensuring quality control and ingredient authenticity, consumers are becoming more confident in Ayurvedic products. AI-driven verification processes help eliminate counterfeit or substandard herbal formulations.

5. AI-Enhanced Consumer Engagement

Brands are using AI to predict trends and personalize marketing, leading to higher engagement. AI-driven insights allow companies to craft targeted campaigns that resonate with individual consumers.

II. REVIEW OF LITERATURE

Costa, Machado et al. (2014) analyzed that the digital world helped marketers in building long-term customer relationship like the grocers, salespersons, and jewellers on a much greater and more efficient scale. FMCG had been riding the waves of expansion in the last 10 years and it won't be any different in the coming years. This paper did not cover the rural population and their contribution to the growth of the FMCG sector. Also, the author forgot to mention retaining consumers policy as it only focused on the customer-building relationship. The digital world with its innovative policies and supply chain management techniques tried to capture complex market trends and follow strategies in order to meet up with consumer demands & to cope up with all the factors which affected FMCG market in an effective & efficient manner.

Tassell et al. (2023) explained that consumers of India had edged to become one of the greatest strength which shaped the Indian society into a better way. Researchers as well as marketers were trying to apprehended the different dimensions of this developing Indian consumer culture. Among these dimensions Brand Trust was one of the most important term which was to be understood. In the category of shampoos, there were no research conducted focusing Brand loyalty to get the better results and valuable information. It was considered in the personal care category of FMCGs. Today's consumers had become more conscious about their health and also taking keen interest in maintaining quality of life which provided maximum satisfaction. In case of a healthy lifestyle Indian had become more inclined to Ayurvedic therapy as alternative healthcare for natural cure. The particular tendency was responsible for a unique blend of Ayurveda and Vedic philosophy under the particular brand.

Zhang et.al (2025) examined the concept of 'green food' also known as organic food (that were safe to be consumed, were of fine quality, were nutritious foods, and concerned with humane animal treatment. Such food were produced under the principle of sustainable development). The author emphasized on green consumer also who could be defined as interested in and cautious of ecological issues and in favor of environmental stability. Organic products were studied with Ayurvedic importance. To reduce the health problem issues, the author focused on the purchase of such products which were having Ayurvedic significance as they always remained fit to consume and had medicinal values.

Gupta et.al (2025) explained that consumer behavior played a crucial part in the area of fast moving consumer goods. This particular behavior was affected by many factors. The contribution of FMCG sector was worth more than which enhances Indian GDP growth rate. Therefore, it was good to know about the changes in consumer purchasing pattern towards FMCGs. This paper focused on the factors like income, occupation, employment opportunities, age etc by which consumer's buying behavior was affected towards FMCG products and ultimately it affected their fundamental process of decision-making. Findings and questionnaire depicted such changes in the form of a marketing mix having 6Ps namely Place, Price, Product, Promotion, People and Process

III. OBJECTIVES OF THE STUDY

- a. To study the perception of consumers towards the purchase of FMCG products using AI technique and having Ayurvedic benefits.
- b. To identify the factors' integrating the consumers using AI Driven ways of purchasing Ayurvedic products of FMCG category.
- c. To analyze the trends of Ayurvedic FMCG brands that helps in understanding the Fusion of Tradition and Technology

IV. INTEGRATING ARTIFICIAL INTELLIGENCE WITH AYURVEDA

The combination of artificial intelligence with conventional Ayurvedic procedures signals a dramatic change in the way wellness products are viewed, sold, and used. AI provides a strong tool to decode complicated consumer behaviour, improve personalisation, and build confidence in Ayurvedic brands as Ayurveda regains popularity in line with world trends toward alternative health treatments. For manufacturers hoping to stay relevant in a competitive, technologically driven market, including artificial intelligence into Ayurvedic FMCG is no more a futuristic idea but rather a strategic need. Rooted in comprehensive well-being, Ayurveda stresses individualization depending on a person's constitution (prakriti), nutrition, surroundings, and way of life. Although its effectiveness and preventive power have been acknowledged for ages, the current consumer driven by knowledge and molded by digital encounters wants more than legacy. They want authenticity, reviews, and approval. AI closes this gap by providing data-driven insights matching conventional Ayurvedic ideas with modern customer expectations. AI is a driver in changing the Ayurvedic product path from post-purchase involvement to product discovery. Especially in the health and wellness industry, consumer attitude is a strong predictor of brand performance and market adoption. A subfield of artificial intelligence called sentiment analysis enables companies to grasp public opinions, feelings, and comments on a detailed level. Sentiment research reveals the emotional and cognitive triggers behind consumer decisions in Ayurveda, where product trust and authenticity are crucial.

Sentiment analysis techniques classify opinions as good, negative, or neutral by means of product reviews, social media conversations, and forum posts. For example, an AI system examining user comments on an Ayurvedic skincare product could identify consistent appreciation for "natural ingredients" and highlight worries about "slow results." Such real-time feedback loops provide useful information that were hitherto hard to collect at scale. Furthermore, artificial intelligence-powered sentiment analysis can follow changes in sentiment over time, hence enabling companies to monitor how changes in marketing strategies, product formulas, or outside events affect public perception. This dynamic awareness enables companies to stay relevant, adjust their communication tactics, and strengthen ties with their consumers. It also alerts early for unmet consumer expectations, brand issues, or product recall. In a field where word-of-mouth and community trust are vital, AI's capacity to examine great amounts of unstructured data gives Ayurvedic businesses a competitive edge.

It guarantees that not only are consumer views heard but also methodically examined and converted into brand activity. Intelligent Ayurvedic market research is mostly enabled by NLP and machine learning (ML). NLP lets computers read, analyze, and extract meaning from human language. NLP is a key tool for grasping consumer language and cultural semantics in the Ayurvedic sphere, where descriptions of health issues, herbs, and lifestyle recommendations are sometimes subtle and linguistically varied. NLP allows for the processing of customer reviews written in regional languages or informal dialects to extract meaningful insights. For instance, an NLP system trained on Ayurvedic product reviews in Hindi, Punjabi, or Tamil can identify underlying themes of product efficacy, taste, or packaging quality. This multi-lingual capacity guarantees inclusivity and a larger reach, so enabling Ayurvedic brands to interact with customers all around. By finding patterns and generating forecasts, machine learning algorithms further enhance this study. While classification models can forecast if a new product launch would succeed in a certain demographic, clustering algorithms can group consumers based on emotion profiles. ML-driven recommendation algorithms propose tailored Ayurvedic items depending on a user's search history, health issues, and past purchases reflecting Ayurveda's fundamental idea of individualised therapy. AI systems can always learn from customer interactions by means of NLP and ML, hence growing smarter with time. More precise targeting, lower product returns, and greater consumer happiness follow from this. In the end, artificial intelligence helps Ayurvedic brands to silently interpret the voice of the consumer and respond to it with speed, precision, and compassion **Jain et. al (2022).**

V. AI-DRIVEN INSIGHTS INTO CONSUMER BEHAVIOR

The field of consumer research has been greatly changed by the fast progress of artificial intelligence. Understanding customer behavior shaped by both traditional beliefs and current choices in Ayurvedic FMCG calls for a complex approach. Particularly natural language processing and machine learning algorithms among artificial intelligence technologies help businesses to understand deeply how people see, interact with, and emotionally respond to Ayurvedic products. This part explores how AI-driven technologies enable demographic and psychographic segmentation as well as sentiment trends hidden in digital customer conversation. Often based on age, gender, geography, or income, traditional marketing segmentation methods depend on surveys and interviews to categorize consumers. By processing large volumes of unstructured data—including social media postings, product reviews, and search activity—AI now allows more dynamic and exact categorization. Using metadata, geolocation tags, and language analysis, AI-powered applications may automatically extract demographic signals from digital content. For example, artificial intelligence might classify consumers into certain age categories or cultural communities by examining user profiles and their online interactions with Ayurvedic companies. This is particularly helpful for determining how younger urban people vary in their expectations from older, rural consumers who may have a deeper cultural love for Ayurveda. Beyond demographics, psychographic segmentation driven by artificial intelligence emphasizes beliefs, attitudes, and lifestyle choices. NLP examines consumer language to find emotional tones, belief systems, and health consciousness. For instance, those who regularly discuss natural healing, sustainability, and wellness in their postings are probably from a group that prioritises authenticity and holistic health. These revelations help companies create focused messages that appeal to various consumer profiles from the cynical health-conscious millennial to the traditional-rooted middle-aged user. Furthermore, artificial intelligence can monitor behavioral trends over time, spotting changes in consumer preferences throughout seasons or in reaction to developing health trends including immunity during the COVID-19 epidemic. This allows companies to more quickly improve their marketing strategies and product positioning. Online reviews are a vital source of real-time consumer feedback in the age of digital trade. On websites like Amazon, Flipkart, and health blogs, consumers discuss their experiences, worries, and degrees of satisfaction with Ayurvedic items. Designed to draw emotional meaning from this text-based data, AI-driven sentiment analysis technologies Using machine learning techniques, sentiment analysis classifies text into categories including positive, negative, or neutral and determines the strength of these emotions. For Ayurvedic items, this is especially useful as people frequently discuss sensory qualities (e.g., scent, texture), perceived efficacy, and congruence with traditional values. A customer review saying, "This herbal shampoo smells amazing and feels just like my grandmother's homemade remedy," for instance, could be considered very favorable with strong traditional and sensory connections. Conversely, a statement like, "Didn't see any results after weeks of use feels like a marketing gimmick," not only expresses a negative feeling but also doubts about the legitimacy of the product **Sheela (2025)**. AI technologies can produce sentiment heat maps to show more general consumer patterns by compiling hundreds of such evaluations. By knowing which product qualities are regularly lauded or condemned, brands can address quality concerns or enhance formulation. Moreover, sentiment patterns can be cross-analyzed with demographic segments to reveal insights like how metropolitan consumers view packaging as opposed to how rural consumers prioritize efficacy **Jana et.al (2024)**. These AI-driven insights enable companies to go beyond superficial comments and explore the underlying needs and worries of their consumers. By spotting developing discontent or false information early in the review cycle, they also help in proactive reputation management. Driven by rising customer desire for natural and herbal products, Ayurvedic FMCG firms have experienced extraordinary growth over the last five years. Some important patterns that have influenced their appearance are shown in Fig. 2.



Fig. 2. Trends of Ayurvedic FMCG brands

1. Rising Consumer Awareness

Consumers are becoming more health-conscious and seeking chemical-free, organic alternatives. Ayurveda-based FMCG products have gained popularity due to their perceived safety and effectiveness.

2. Expansion of Major Brands

Established brands like Patanjali, Dabur, Himalaya, and Baidyanath have expanded their product lines, introducing Ayurvedic versions of everyday essentials such as toothpaste, skincare, and wellness supplements.

3. Entry of New Players

Several new Ayurvedic FMCG brands have entered the market, offering innovative herbal formulations. Companies are blending traditional Ayurvedic wisdom with modern scientific research to create effective and appealing products.

4. Digital & E-Commerce Boom

The rise of online shopping platforms has made Ayurvedic products more accessible. Brands are leveraging AI-driven marketing strategies to target consumers and provide personalized recommendations.

5. Government & Regulatory Support

The Indian government has actively promoted Ayurveda through initiatives like AYUSH, encouraging research and development in Ayurvedic FMCG products.

6. AI & Technology Integration

AI is helping brands analyze consumer preferences, optimize supply chains, and ensure quality control in herbal formulations.

VI. CONCLUSION

The merging of artificial intelligence with Ayurveda is a major advance in healthcare innovation. This combination provides a road to more individualized, efficient, and internationally known Ayurvedic therapies by combining technology developments with respect ancient knowledge. Navigating the difficulties and optimizing the advantages of this integration will depend on ongoing cooperation among technologists, Ayurvedic practitioners, and legislators. Ultimately, the union of artificial intelligence and Ayurveda is a cultural milestone honoring the past while welcoming the future, not only a technical accomplishment. We can build a healthy marriage between traditional knowledge and current technology by encouraging responsible AI deployment and cooperation, hence improving healthcare and mankind **Trivedi and Negi (2024)**.

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