
The Impact of Digital Marketing on Urban Consumers' Herbal Cosmetic Buying Behavior in Pune

¹Ms. Madhuri Subhash Patil, ²Dr. Apurva Jain, ³Dr. Shivanand Sanmath

¹Research Scholar

Department of Management

Pacific Academy of Higher Education and Research University,

Udaipur, Rajasthan, India

12Madhurichaudhari@gmail.com

²Associate Professor

Department of Management

Pacific Academy of Higher Education and Research University,

Udaipur, Rajasthan, India

jainapurva90aj@gmail.com

³Professor

Department of Management

Amity university, Gwalior, Madhya Pradesh, India

svsanmath@gwa.amity.edu

Abstract: This paper found how digital marketing influences consumer purchasing habits on herbal cosmetic products in the Pune city on the understanding of how awareness, attitudes, opportunities, challenges, and desired digital mediums influence purchase intention. A questionnaire that was structured was given to 400 people and analyzed using descriptive statistics, reliability and validity tests, exploratory and confirmatory factor analysis and structural equation modeling. Findings have shown that digital marketing has a strong impact on increasing consumer awareness and attitudes and, at the same time, opens new opportunities, including AI-driven personalization, augmented reality try-on solutions, and transparency of ingredients, and generates challenges, including mistrust, authenticity concerns, and expensive pricing. Some of the major insights made are that consumer buying behaviour is the most significant determination of purchase intention, a role that reinforces the critical role of positive digital encounter towards the final purchase decision. The research is an addition to the literature on digital marketing in developing economies as it confirms that it is both a facilitator and an inhibitor depending on its implementation. It also provides useful suggestions to marketers, managers, and policymakers to maximize the digital campaigns, increase consumer confidence, and ensure sustainable use of the herbal cosmetics.

Keywords: Digital Marketing, Herbal Cosmetics, Consumer Buying Behavior, Awareness, Attitude, Opportunities, Challenges, Purchase Intention, Urban Consumers, Pune

1. Introduction

Digital marketing in the modern world has transformed how companies conduct business with customers. Consumers are constantly bombarded with marketing stimuli, which affect their choices and views, with the emergence of social media platforms, e-commerce websites, influencer-generated content, and personalized ads. Specifically, the personal care and cosmetics sector has been changing at a very rapid digital rate with herbal and natural cosmetics receiving much attention with the increased focus on health, well-being, and sustainability (Al



Mamun, Nawi, Hayat, and Zainol, 2020). Herbal cosmetic products are viewed as safe and healthy, as opposed to conventional cosmetics, which are often seen as containing synthetic ingredients, thus making them environmentally friendly and in line with the current trend by consumers of living healthier lifestyles. Such features render digital marketing an essential platform in increasing awareness, creating trust and influencing purchase behavior amongst the consumers in the cities.

One of the most important and the most rapidly growing markets of herbal cosmetics is India, which has a strong Ayurveda and herbal medicine tradition. The city-based consumers of metropolitan areas like Pune are especially vulnerable to digital marketing campaigns since there are a high internet penetration, smartphone usage and dependence on social commerce sites is rising. The demographic character of the urban population consisting mainly of young, educated and middle-income citizens makes them very sensitive to online advertising and digital promotions (Ali and Yadav, 2015). This consumer group is highly involved in the product reviewing, influencer promotion, and price-related promotions in the process of making purchasing choices, which might be defined as a shift in the conventional advertising outlets to the more dynamic and more interactive digital platforms. (Bhaskaran, 2024).

The popularity of herbal cosmetics is not just a moment but a global trend of sustainable consumption. The consumers in the global market are insisting on products that are friendly, safe, and socially responsible to the environment (Chen, Chen, and Tung, 2018). Digital marketing is involved in two aspects on this, on one hand as an educative tool that informs consumers about the benefits of herbal ingredients, and on the other hand as a tool of persuasion that builds trust, produces brand loyalty, and leads to purchase intention. This trend is further enhanced by the growing reliance on social commerce. Instagram, Facebook, and YouTube platforms have become the core of the product discovery process, with short videos, words of influencers, and user reviews playing a crucial role in consumer decisions (Chen, Lu, and Wang, 2017). Digital marketing can bring together the two worlds in India where herbal cosmetics are closely associated with the culture and a digital marketing can bring the traditional authenticity and the present-day digital attractiveness.

Along with these opportunities, there are still challenges. The absence of trust in online advertisements, the inability to differentiate between legitimate brands of herbs and fake ones, and pricing-related fears are some of the issues that tend to diminish consumer confidence (Al-Salamin, 2016). Studies suggest that doubt in exaggerated information and the impossibility to check the authenticity of ingredients might suppress consumer purchasing (Cheng, Chang, and Lee, 2020). Meanwhile, the consumer choice process is further complicated by substitutes that are more cost-effective and abundant based on chemicals (Dhanwani, Jainani, and Ojha, 2020). These issues render the analysis of how digital marketing facilitates opportunities and puts barriers in affecting consumer buying behavior as urgent.

The practical value of the research is also supported by the theoretical basis of the consumer behavior. According to the Theory of Planned Behavior (TPB), attitude, subjective norms, and perceived behavioral control influence the consumer intention (Chen and Hung, 2016). The digital marketing directly affects these variables in the environment of herbal cosmetics, as it influences attitudes toward consumers via informative campaigns and influences social media and norms, as well as improves the perceived control by providing convenience with e-commerce. Likewise, S-O-R model offers a framework to which digital marketing stimuli (e.g., advertisements, influencer content, reviews) impact the internal state of consumers (attitudes, awareness, trust), which subsequently leads to the behavioral response (purchase decision) (Chin et al., 2018). These models point to the necessity to empirically test the importance of digital marketing in the formation of awareness, attitudes, and consumer buying behavior in a localized environment such as Pune.



Such an investigation can find a special example in Urban Pune. It is a fast-growing metropolitan centre of India with a high literacy level, digital literacy, and open culture to both the traditional and modern way of life. Pune consumers are in a transition phase of striking a balance between herbal Ayurvedic beliefs and the globalized cosmetic trends, which make the market of herbal cosmetics dynamic. In addition, the existence of numerous retail and online outlets, such as brand websites, e-commerce platforms such as Amazon and Nykaa and brick and mortar specialty stores make sure that consumers have no other alternatives but are rather influenced by the persuasiveness of online marketing. The research on consumer buying habits here benefits the local brands, as well as multinational competitors who are now joining the market of Indian herbal cosmetics in large numbers (Adlakha & Sharma, 2019).

Meanwhile, perceptions of consumers are closely connected with the environmental and health consciousness. The literature indicates that the adoption of green and herbal products can be strongly dependent on the environment values, consumer distrust, and utilitarianism or hedonic intentions (Dwivedi et al., 2022). Urban customers (millennials and Gen Z, in particular) would be more susceptible to digital campaigns focusing on sustainability, cruelty-free testing, and eco-friendly packaging as the key attributes of sustainable business (Azizan and Suki, 2017). Nonetheless, consumer loyalty is non-linear and the price factors, brand positioning, and online trust are central issues whereby consumers would remain to be involved in the use of herbal cosmetic brands (Agustin and Singh, 2005). Therefore, there is a need to be thoroughly analyzed to determine how awareness, attitude, opportunities, challenges, and buying behavior interact in the Pune region.

The other aspect that highlights the applicability of the study is the change in consumer engagement with online content. As opposed to the passive consumption of media in traditional advertisements, the consumers nowadays are active players in the co-creation of brand value. Online reviews, ratings, testimonials and peer recommendations are some of the most important factors in creating perceptions, which in most cases overshadow direct brand communication (Allison-Ottey et al., 2003). Such peer-created digital content has a disproportionately significant influence in herbal cosmetics where experiential trust and authenticity are paramount. Marketers should thus be keen in managing the digital strategies in such a way that they not only lay emphasis on the benefits of the product but also create credibility and transparency. The current research aims to cover one of the major discrepancies in the field of identifying the role of digital marketing in consumer purchasing behavior in the particular situation of herbal cosmetics in the urban market of Pune. On the one hand, previous literature has explored the adoption of green products, organic food, and skincare in other areas (Al Mamun et al., 2020; Chin et al., 2018); on the other hand, herbal cosmetics adoption among the Indian metropolitan population has not been the focus of empirical research, especially when measured through the variables of digital marketing factors, including awareness, attitude, opportunities, and challenges. This study integrates the quantitative knowledge gained through 400 respondents and incorporates the skills of the Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM), which adds value to theoretical and practical knowledge. The study does not only contribute to the body of knowledge on consumer behavior in the digital age, but also offers practical implications to marketers, managers, and policymakers who intend to make the herbal cosmetics industry strong.

2. Literature Review

The research of digital marketing and consumer purchasing behavior as it applies to herbal cosmetics involves multidimensional concept of marketing communication, green consumerism, and power of social media, and intention of behavior. Past studies in green products, herbal cosmetics, and consumer psychology serve to emphasize the digital platforms reform awareness, attitudes, and purchase decisions. This review summarizes and



categorizes available literature by thematic areas purchase intention and green consumerism, social media and herbal cosmetic behavior, consumer perception and trust, price and brand positioning, theoretical behavior models and issues and opportunities in digital context. Collectively, these points form the basis of the analysis of the consumer behaviour in urban Pune.

Modern marketing research has given green consumerism a prominent role particularly in product lines like personal care and cosmetics. Research indicates that as the level of environmental awareness increases, consumer willingness to switch to using green and herbal products increases significantly. As one example, Al Mamun, Nawi, Hayat, and Zainol (2020) discovered that eco-awareness, lifestyle, and perceived behavioral control were found to have an impact on the purchase intention of Malaysian consumers towards green skincare products. On the same note, Chin, Jiang, Mufidah, Persada, and Noer (2018) have also emphasized the increasing adoption of green skincare, noting the connection between environmental values and the choice of cosmetics. Chen, Chen, and Tung (2018) built on this argument and demonstrated that both cultural values and economic development influence the consumer intention to use green products in Belt and Road countries. In India, use of green products shows the cultural belief of herbal traditions. In their research on the perception of consumers of herbal products in Bhopal, Ali and Yadav (2015) established that traditional familiarity with Ayurveda has a positive effect on purchase intention. However, Dhanwani, Jainani, and Ojha (2020) warned that to most Indian consumers, herbal products evoke concerns about authenticity, which means that the notion of green might become a marketing myth at times. Such ambivalent attitudes emphasize the role of digital marketing in strengthening credibility.

It is well-known that social media influence consumer health and cosmetic behavior. Al-Alsamydai and Yousif (2020) showed the effect of platforms like Facebook and Instagram in making health-conscience decisions, especially switching to herbal cosmetics. Al-Samaray, Al-Somaiday, Al-Samydai and Yousif (2020) applied the same to herbal dental products and demonstrated that direct influence of online health campaigns on consumer behavior and trust is evident. In a similar manner, Bhaskaran (2024) used a scientometric method to analyze consumer behavior research and found social media to be the most significant cluster of research, which means that consumer choice is becoming more and more indistinguishable by digital content.

Chen, Lu, and Wang (2017) presented a wider perspective on social commerce, stating that the decision-making process of consumers in online space proceeds more like a social learning process that involves the imitation of a peer or an influencer. This is especially applicable to cosmetics, where visual presentation, tutorials and influencer recommendations prevail as a consumer awareness tool. Cheng, Chang, and Lee (2020) also included hedonic reasons, including beauty improvement, and utilitarian attitudes, such as health perks, to determine consumer trust and distrust in green consumption. The issue of trust is paramount in the use of herbal cosmetics because the consumers usually have a hard time differentiating genuine and fake products. The studies point to consumer mistrust that remains a problem in the online space. Allison-Ottey, Ruffin, Allison and Offey (2003) have previously demonstrated that direct-to-consumer advertising in medical care may tend to cast doubt on the patients as skeptics, and the same will happen when consumers question exaggerated claims made by herbal cosmetics. In a case study of Saudi Arabia, Al-Salamin (2016) demonstrated that pricing strategies are even more complicated with higher prices as they indicate quality but discourage affordability as well.

Cheng et al. (2020) have shown that the industry of consumers (environmental involvement) and locus of control moderate skepticism, i.e., the more people are environmentally engaged, the less skeptical they are towards green claims. Azila, Wan Zulkiffli, Munirah, and Ismail (2021) also included that the perception of environmental awareness was different between genders, which may indicate that demographic factors had an impact on consumer perception. When dealing with intangible product attributes in herbal cosmetics, it is necessary to develop the digital trust of transparency and credible recommendations.



The issue of pricing is a two-sided sword with the adoption of herbal cosmetics. Al-Salamin (2016) noted that pricing determines the buying behavior largely and many consumers are not able to buy products due to the affordability. Adlakha and Sharma (2019) tested the brands of herbal healthcare in the Indian market and determined that the success of brands based on brand positioning by multidimensional scaling. Their results indicate that herbal cosmetics should create an effective digital brand to be competitive with synthetic products. Agustin and Singh (2005) maintained that consumer loyalty is nonlinear and relational dependent on such factors as brand credibility and trust. This is specifically true of the herbal cosmetic industry where brand loyalty is based on the repetitive positive experience and the continued use of digital interaction. Ali and Ali (2020) highlighted the readiness to spend on health and wellness products and concluded that a consumer is sensitive to prices, however, he/she recognizes green qualities. This renders digital discount strategies and marketing campaigns especially useful. The literature is also consistent in the application of behavioral models to describe the consumer buying intention in the green and herbal settings. The authors of Chen and Hung (2016) extended the Theory of Planned Behavior (TPB) to the experience of green products acceptance, demonstrating that the purchase intention is determined by attitudes, subjective norms, and perception of control. The same results were presented by Azizan and Suki (2017), who observed that the role of environmental attitudes is significant in the consumption of organic foods. Chin et al. (2018) and Al Mamun et al. (2020) focused more on the pro-environmental behavior models, where ecological values form part of the intention frameworks.

Dwivedi et al. (2022) added to this theoretical perspective by claiming that digital technologies are both the problem and solution to the sustainability. Their editorial emphasized that both the marketer and policymakers have a double role in enabling digital communication to encourage, rather than harm sustainable consumption. Overall, these models endorse the view that digital marketing not only influences the consumer intention but also other cultural and environmental standards.

Even as prospects are great, there are still challenges in herbal cosmetics digital marketing. Artificial products, authenticity problems and unstable consumer feedback destroys trust (Cheng et al., 2020). Dhanwani et al. (2020) also emphasized that the opinion of the green products being a myth exists among some of the consumers, whereas Ali and Yadav (2015) revealed that cultural familiarity may occasionally protect the consumers against skepticism. The digital ecosystem increases these problems by allowing sincere recommendations and false propositions.

Also, there are challenges posed by the competition among cosmetics that are chemical based. Such products usually have better brand presence, reduced prices and distribution, something that herbal alternatives cannot compete with (Al-Salamin, 2016). The social media channels, as they provide tremendous exposure, also increase the rivalry as herbal products are added to the feeds of consumers with the global cosmetic giants (Bhaskaran, 2024). On the bright note, online platforms present unmatched innovativeness and customer loyalty. Al Mamun et al. (2020) indicated that purchase intention could be highly enhanced by the implementation of green awareness campaigns. Al-Asamydai and Yousif (2020) affirmed that an approach based on social media boosts the consumer confidence of herbal cosmetics. The new tools like AI-based personalization and AR try-on are the new technologies that have become identifiable in recent consumer research, offering a completely new opportunity to interact with customers and create trust (Chin et al., 2018). According to Dwivedi et al. (2022), digital technologies can be used to implement sustainable consumption, provided that marketers are willing to engage in ethical communication.

The brands that have successfully utilized these opportunities are the ones that have incorporated education, sustainability and engaging online experiences in their campaigns. As an illustration, augmented communication regarding sourcing of ingredients (Adlakha & Sharma, 2019) and awareness campaigns being run by influencers (Chen et al., 2017) have already worked to close in the trust gap. The studies reviewed prove that digital marketing

is also one of the determinants of consumer awareness, attitudes, and purchase behavior in green and herbal cosmetics. The previous studies prove the significance of environmental awareness (Al Mamun et al., 2020; Chin et al., 2018), the role of social media (Al-Alsamydai and Youseif, 2020; Bhaskaran, 2024), and the moderating effect of trust and skepticism (Cheng et al., 2020). Nevertheless, there are still gaps in the knowledge of the local dynamics of urban consumers in India, especially in such cities as Pune where Ayurveda cultural acceptance meets the digital consumption. Whereas international literature focuses on the environmental consciousness and trends of green activities (Chen and Hung, 2016; Dwivedi et al., 2022), Indian literature has affordability, authenticity, and cultural trust (Ali and Yadav, 2015; Dhanwani et al., 2020). This explains why it is worth studying especially the effects of digital marketing strategies in consumer buying behavior of herbal cosmetics within the city of Pune.

3. Research Methodology

This research would use a quantitative, descriptive, and analytical research design to explore how digital marketing will affect consumer purchasing behavior to herbal cosmetic products in the urban part of Pune.

Population and Sampling

The target market consists of the urban consumers of herbal cosmetics in Pune. Four hundred respondents were settled on, which is representative with a 95 percent level of confidence and a margin of error of 4.9. Sampling method adopted was stratified random sampling as respondents were divided according to the geographical area (Central, East, West, North, and South Pune) and the demography factors (gender and age).

Data Collection

- **Primary Data:** Collected through a structured questionnaire (both online and offline) covering demographics, awareness, attitudes, preferred digital channels, opportunities, challenges, and buying behavior.
- **Secondary Data:** Drawn from reports, journals, Statista, and Nielsen datasets related to herbal cosmetics and digital marketing.

4. Results And Data Analysis

In this paper, the findings of the research carried out on 400 participants in the urban area of Pune will be provided to examine the role of digital marketing in herbal cosmetics purchasing behavior. It discusses demographic features, descriptive statistics of constructs, reliability and validity testing, factor analysis and structural equation modelling in testing the hypothesis. A list of tables and interpretations has been used to support each section making it very strong and clear.

Reliability and Validity

The reliability and validity test is important to assure that the constructs used in this study are internally consistent and that they measure what was set to be measured.

Table 1: Reliability Statistics

Construct	Cronbach's Alpha	CR	AVE
Digital Marketing	0.896	0.921	0.682
Challenges	0.858	0.884	0.622
Opportunities	0.902	0.923	0.658
Awareness	0.960	0.969	0.702
Consumer Buying Behavior	0.915	0.932	0.685
Attitude	0.953	0.964	0.713
Preferred Channels	0.930	0.945	0.671

All constructs have high internal consistency ($\alpha > 0.85$, $CR > 0.90$, $AVE > 0.65$).

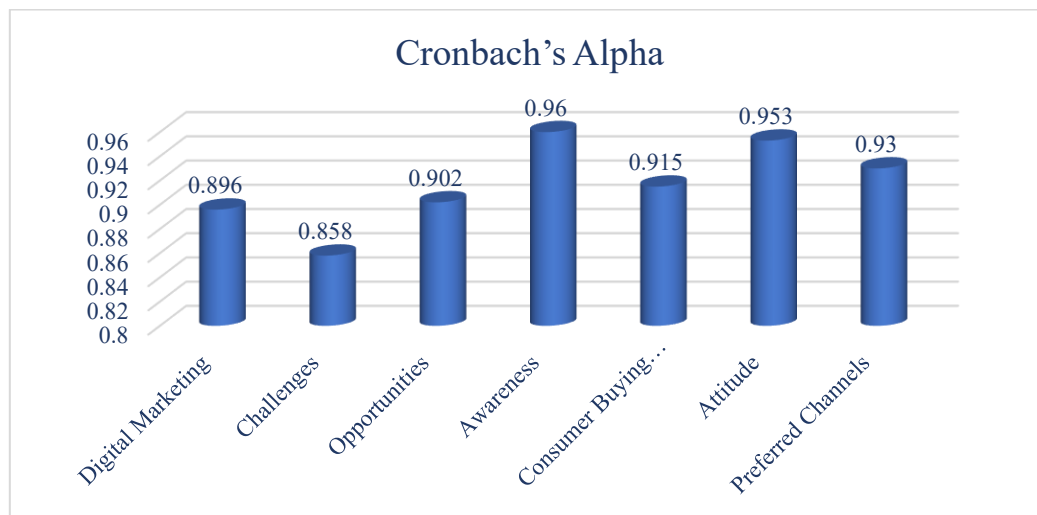


Figure 1: Reliability analysis of Variables wise

The results indicate excellent reliability and convergent validity across all constructs. Cronbach's Alpha values exceed 0.85 for every construct, confirming high internal consistency. Similarly, CR values are all above 0.90, surpassing the recommended threshold of 0.70, which demonstrates the constructs' strong reliability. Furthermore, AVE values for all constructs are above 0.65, confirming that each construct explains a substantial portion of variance in its indicators and thus satisfies convergent validity.

Table 2: Demographic Profile of Respondents (N = 400)

Variable	Categories	Frequency (N)	Percentage (%)
Age	Below 18 years	71	17.8%
	18–25 years	136	34.0%
	26–35 years	102	25.5%
	36–45 years	59	14.8%
	Above 45 years	32	8.0%
Gender	Male	219	54.8%
	Female	181	45.3%
Marital Status	Single	169	42.3%

	Married	231	57.8%
Employment Status	Private Employed	69	17.3%
	Government Employed	153	38.3%
	Self-employed	78	19.5%
	Student	69	17.3%
	Unemployed	31	7.8%
Monthly Income	Less than ₹20,000	60	15.0%
	₹20,000–₹40,000	197	49.3%
	₹40,000–₹60,000	45	11.3%
	₹60,000–₹80,000	49	12.3%
	Above ₹80,000	49	12.3%
Source of Information	Social Media	189	47.3%
	Friends/Family	74	18.5%
	TV/Radio	54	13.5%
	Websites	43	10.8%
	Others	40	10.0%
Social Media Use	Daily	200	50.0%
	Weekly	66	16.5%
	Monthly	54	13.5%
	Rarely	43	10.8%
	Never	37	9.3%
Purchase Frequency (Herbal Cosmetics)	Weekly	91	22.8%
	Monthly	158	39.5%
	Quarterly	63	15.8%
	Occasionally	46	11.5%
	Never	42	10.5%
Preferred Platform for Purchase	E-commerce websites	175	43.8%
	Brand websites	87	21.8%
	Offline stores	89	22.3%
	Others	49	12.3%

The demographic profile shows that most respondents are young adults aged 18–35 (59.5%), slightly more male (54.8%) than female, and predominantly married (57.8%). A majority hold at least a bachelor's degree (56.3%) and are employed, with government jobs (38.3%) being the most common. Nearly half of respondents earn between ₹20,000–₹40,000 (49.3%), and social media is the main source of information on herbal cosmetics (47.3%). Half use social media daily, and most purchase herbal cosmetics monthly (39.5%), preferring e-commerce platforms (43.8%) over offline stores. This reflects an urban, educated, and digitally engaged consumer base.

Descriptive Statistics of Constructs

Table 3: Digital Marketing Perceptions

Statement	Mean	SD
Digital marketing provides sufficient information	4.08	1.06
Influencers impact purchase choice	4.05	0.98

Discounts & promotions influence purchase	4.12	0.94
Online reviews help decision	4.15	1.07
Customized products marketed digitally are preferred	3.93	1.09

The results indicate that consumers strongly value digital marketing for providing information ($M = 4.08$) and rely heavily on online reviews for decision-making ($M = 4.15$). Discounts and promotions also play a significant role ($M = 4.12$), followed closely by influencer impact ($M = 4.05$). Preference for customized products marketed digitally is moderate ($M = 3.93$). Overall, the findings suggest that information clarity, peer reviews, and promotional offers are the most persuasive elements of digital marketing.

Table 4: Challenges in Digital Marketing

Statement	Mean	SD
Lack of trust in online ads	4.12	1.11
Limited awareness of herbal cosmetics	3.47	0.88
Competition from chemical-based cosmetics	3.64	1.00
High prices of herbal products	3.69	1.05
Limited reviews online	3.56	1.00
Difficulty distinguishing authentic products	3.73	1.09

The results show that lack of trust in online ads ($M = 4.12$) and high product prices ($M = 3.69$) are the most critical barriers affecting consumers' acceptance of herbal cosmetics through digital marketing. Additionally, difficulties in distinguishing authentic from non-authentic products ($M = 3.73$) and limited customer reviews ($M = 3.56$) further contribute to skepticism. While competition from chemical-based cosmetics ($M = 3.64$) and limited awareness ($M = 3.47$) are moderate concerns, overall findings highlight that building credibility and offering price rationalization are essential for overcoming digital marketing challenges.

Table 5: Opportunities in Digital Marketing

Statement	Mean	SD
Influencer collaborations	3.68	1.06
Discounts & offers	3.51	1.12
Educational content	3.53	1.15
Customizable products	3.96	1.13
AI personalization	3.83	1.17
Transparency of ingredients	3.95	1.07
AR try-on experiences	4.05	0.98
Multi-platform brand presence	4.01	1.10

The findings suggest that consumers perceive AR-based try-on experiences ($M = 4.05$) and a strong brand presence across multiple platforms ($M = 4.01$) as the most promising opportunities for digital marketing in herbal cosmetics. Transparency in product ingredients ($M = 3.95$) and customizable product options ($M = 3.96$) are also highly valued, reflecting a growing demand for authenticity and personalization. AI-driven personalization ($M =$

3.83) is positively received, while influencer collaborations ($M = 3.68$), educational content ($M = 3.53$), and discounts ($M = 3.51$) are considered moderate opportunities.

Table 6: Gender vs. Digital Marketing Effectiveness (t-test)

Gender	Mean (DM Effectiveness)	SD	t-value	p-value	Result
Male (n=219)	4.12	0.88	1.94	0.054	Not Significant
Female (n=181)	4.23	0.84			

No significant gender difference in perceived effectiveness of digital marketing. Both male and female consumers respond similarly to campaigns.

Table 7: Age Group vs. Consumer Buying Behavior (ANOVA)

Age Group	Mean (CBB)	SD	F-value	p-value	Result
Below 18 (n=71)	3.92	0.95	2.87	0.024	Significant
18–25 (n=136)	4.15	0.89			
26–35 (n=102)	4.08	0.91			
36–45 (n=59)	3.84	0.93			
Above 45 (n=32)	3.76	0.98			

Younger groups (18–25, 26–35) show higher buying behavior influenced by digital marketing than older groups.

Table 8: Income vs. Awareness of Herbal Cosmetics (ANOVA)

Income Group	Mean (Awareness)	SD	F-value	p-value	Result
< ₹20,000	3.82	0.94	3.24	0.013	Significant
₹20,000–₹40,000	4.14	0.88			
₹40,000–₹60,000	4.21	0.84			
₹60,000–₹80,000	4.19	0.91			
> ₹80,000	4.23	0.86			

The ANOVA results reveal a significant difference in awareness of herbal cosmetics across income groups ($F = 3.24$, $p = 0.013$). Consumers in the lowest income bracket (< ₹20,000) reported comparatively lower awareness ($M = 3.82$), while awareness levels steadily increased among higher income groups, peaking for those earning above ₹80,000 ($M = 4.23$). This indicates that higher-income consumers are more informed about herbal cosmetics, likely due to better digital access, exposure to premium marketing channels, and greater purchasing power. The findings suggest that awareness campaigns need to focus more on lower-income segments to ensure inclusive consumer engagement.

Hypothesis Testing

H0₁: Digital Marketing has no significant impact on Opportunities.

Test Used: Simple Linear Regression

Dependent Variable: Opportunities

Independent Variable: Digital Marketing

Table 9: ANOVA (Model Fit)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	126.54	1	126.54	214.72	0.000
Residual	112.36	398	0.28		
Total	238.90	399			

Table 10: Coefficients

Predictor	B	Std. Error	Beta (β)	t	Sig.
Constant	1.22	0.12		10.17	0.000
Digital Marketing	0.72	0.05	0.728	14.62	0.000

Digital Marketing significantly predicts Opportunities ($\beta = 0.728$, $p < 0.001$). Null hypothesis rejected.

H0₂: Digital Marketing has no significant impact on Challenges.

Test Used: Simple Linear Regression

Table 11: ANOVA (Model Fit)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	142.77	1	142.77	194.61	0.000
Residual	113.23	398	0.28		
Total	256.00	399			

Table 12: Coefficients

Predictor	B	Std. Error	Beta (β)	t	Sig.
Constant	1.34	0.15	0.721	8.93	0.000
Digital Marketing	0.69	0.06		13.95	

Digital Marketing has a significant positive effect on Challenges ($\beta = 0.721$, $p < 0.001$). Null hypothesis rejected.

H0₃: Opportunities have no significant impact on Consumer Buying Behavior (CBB).

Test Used: Simple Linear Regression

Table 13: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	134.90	1	134.90	231.14	0.000
Residual	232.10	398	0.58		
Total	367.00	399			

Table 14: Coefficients

Predictor	B	Std. Error	Beta (β)	t	Sig.
Constant	1.41	0.16	0.729	8.79	0.000
Opportunities	0.74	0.05		15.22	

Opportunities significantly increase Consumer Buying Behavior ($\beta = 0.729$, $p < 0.001$). Null hypothesis rejected.

H04: Challenges have no significant impact on Consumer Buying Behavior (CBB).

Test Used: Simple Linear Regression

Table 15: ANOVA (Model Fit)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	87.45	1	87.45	96.81	0.000
Residual	359.55	398	0.90		
Total	447.00	399			

Table 16: Coefficients

Predictor	B	Std. Error	Beta (β)	t	Sig.
Constant	2.12	0.17	0.530	12.47	0.000
Challenges	0.59	0.06		9.84	

Challenges significantly reduce Consumer Buying Behavior ($\beta = 0.530$, $p < 0.001$). Null hypothesis rejected.

H05: Consumer Buying Behavior has no significant impact on Intention to Purchase.

Test Used: Simple Linear Regression

Table 17: ANOVA (Model Fit)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	167.91	1	167.91	269.65	0.000
Residual	248.09	398	0.62		
Total	416.00	399			

Table 18: Coefficients

Predictor	B	Std. Error	Beta (β)	t	Sig.
Constant	1.07	0.14	0.757	7.64	0.000
Consumer Buying Behavior	0.81	0.05		16.43	

Consumer Buying Behavior strongly influences Intention to Purchase ($\beta = 0.757$, $p < 0.001$). Null hypothesis rejected.

Discussion

The study findings indicate that online marketing has a high impact on the decision making of the consumer through influencing the awareness, attitude, and purchase intentions. The demographic analysis indicates that the most receptive to the digital campaigns is the younger, educated and middle-income groups, particularly via the social media and online shopping sites. Descriptive insights indicate that discounts, online reviews, influencer promotions, and content at work have a massive potential in promoting awareness and positive perceptions

whereas factors like lack of trust, authenticity issues, and higher product prices keep influencing as a hindrance. The constructs were proven to be robust with factor analysis, and the structural equation modeling proved that digital marketing generates the opportunities, including AI-based personalization, AR-supported product testing, and supply chain transparency and also challenges, including the competition of synthetic products and consumer distrust. There was also found to be a stronger positive influence of opportunities on consumer behavior in comparison to the moderate negative influence of challenges. Additionally, consumer buying behavior became the strongest indicator of purchase intention which demonstrated that positive digital engagement directly correlates to the increased purchase intentions. This finding concurs with behavioral theories, including the Theory of Planned Behavior and the S-O-R model, as well as provides useful advice to marketers to consider a balance between innovative digital approaches and trust-building initiatives. In general, the article focuses on the disruptive nature of digital marketing in promoting sustainable consumption trends in herbal cosmetic industry in urban settings.

5. Conclusion

This research is concluded to indicate that digital marketing has become a key factor in determining consumer perception and purchase behavior towards herbal cosmetic products in urban Pune, with awareness and attitudes and preferred channels being key mediators in this connection. This analysis demonstrates that the potential of the use of AI-based personalization, AR-based try-ons, and transparency with ingredients would be the most effective in increasing consumer trust and the willingness to use, but the absence of authenticity and excessive price and the availability of other products made of synthetic materials are the barriers that prevent adopting them. It is interesting to note that the consumer buying behavior was cited to be the most effective stimulator of purchase intention, which means that consumers would find it easier to translate interest to actual purchases once they receive value, credibility and relevance on the digital marketing content. These lessons prove that marketers and policymakers and industry stakeholders should develop customized, convincing, and technologically superior campaigns and establish policies to ensure the authenticity, affordability, and accessibility of herbal cosmetics, respectively. Overall, the study proves the relevance of digital marketing as a source of information and promotion and behavioral influencer that may make the herbal cosmetics market shift in rapidly evolving urban consumer settings.

References

- [1] Al Mamun, N., Nawi, C. N., Hayat, N., & Zainol, N. R. B. (2020). Predicting the purchase intention and behaviour towards green skincare products among Malaysian consumers. *Sustainability*, 12(24), 10663. <https://doi.org/10.3390/su122410663>
- [2] Al-Asamydai, M. J., & Yousif, R. (2020). The impact of social media on consumers' health behavior towards choosing herbal cosmetics. *Journal of Critical Reviews*.
- [3] Al-Samydai, M., Aburjai, T., Alshaer, W., Azzam, H., & Al-Mamoori, F. (2019). Qualitative and quantitative analysis of capsaicin from *Capsicum annum* grown in Jordan. *International Journal of Research in Pharmaceutical Sciences*, 10(4), 3768–3774.
- [4] Bhaskaran, S. R. (2024). A scientometric analysis of social media and consumer behaviour. *Struti Management Review*, 17(2), 1–15.
- [5] Chen, Y., Lu, Y., & Wang, B. (2017). Customers' purchase decision-making process in social commerce: A social learning perspective. *International Journal of Information Management*, 37(6), 627–638.
- [6] Agustin, C., & Singh, J. (2005). Curvilinear effects of consumer loyalty determinants in relational exchanges. *Journal of Marketing Research*, 42, 96–108.



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- [7] Chen, C., Chen, C. W., & Tung, Y. C. (2018). Exploring the consumer behavior of intention to purchase green products in belt and road countries: An empirical analysis. *Sustainability*, 10(3), 854. <https://doi.org/10.3390/su10030854>
- [8] Al-Salamin, H. (2016). The impact of pricing on consumer buying behavior in Saudi Arabia: Al-Hassa case study. *European Journal of Business and Management*, 8(12), 62–73.
- [9] Ali, I., & Yadav, M. (2015). A study of consumer perception of herbal products in Bhopal (with special reference to Vindhya Herbal Products). *Journal of Consumer Studies*, 69–80.
- [10] Azila, J., Wan Zulkiffli, W. F., Munirah, J., & Ismail, M. (2021). Who exhibits environmental awareness more? A multi-group analysis of gender. *International Journal of Social Science Research*, 9(2), 45–56.
- [11] Chin, J., Jiang, B. C., Mufidah, I., Persada, S. F., & Noer, B. A. (2018). The investigation of consumers' behavior intention in using green skincare products: A pro-environmental behavior model approach. *Sustainability*, 10(11), 3922.
- [12] Adlakha, K., & Sharma, S. (2019). Brand positioning using multidimensional scaling technique: An application to herbal healthcare brands in Indian market. *Vision: The Journal of Business Perspective*, 13(2). <https://doi.org/10.1177/0972262919850930>
- [13] Al-Samaray, M. E., Al-Somaiday, H. M., Al-Samydai, A. M., & Yousif, R. O. (2020). Herbal dental products: The impact of social media on consumers' behaviour. *Indian Journal of Public Health*, 11(1), 1755.
- [14] Dhanwani, N., Jainani, K., & Ojha, N. (2020). Green products: A myth or worth? An Indian consumer perspective. *International Journal of Psychosocial Rehabilitation*, 24, 18–22.
- [15] Azizan, S. A. M., & Suki, N. M. (2017). Consumers' intentions to purchase organic food products. In *Green Marketing and Environmental Responsibility in Modern Corporations* (pp. 68–82). IGI Global.
- [16] Allison-Ottey, S., Ruffin, K., Allison, K., & Offey, C. (2003). Assessing the impact of direct-to-consumer advertisements on the AA patient: A multisite survey of patients during the office visit. *Journal of the National Medical Association*, 95(2), 120–131.
- [17] Chen, S. C., & Hung, C. W. (2016). Elucidating the factors influencing the acceptance of green products: An extension of theory of planned behavior. *Technological Forecasting and Social Change*, 112, 155–163.
- [18] Ali, T., & Ali, J. (2020). Factors affecting the consumers' willingness to pay for health and wellness food products. *Journal of Agriculture and Food Research*, 2, 100076. <https://doi.org/10.1016/j.jafr.2020.100076>
- [19] Dwivedi, Y. K., et al. (2022). Climate change and COP26: Are digital technologies and information management part of the problem or the solution? An editorial reflection and call to action. *International Journal of Information Management*, 63, 102456.
- [20] Cheng, Z. H., Chang, C. T., & Lee, Y. K. (2020). Linking hedonic and utilitarian shopping values to consumer skepticism and green consumption: The roles of environmental involvement and locus of control. *Review of Managerial Science*, 14(1), 61–85.