***Artificial intelligence tools in Customer Segmentation and applications of AI in Cosmetics Industry***

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**Abstract:**

This research examines the role of Artificial intelligence in customer segmentation and targeting and explore different applications of artificial intelligence in cosmetics sector. We also discuss the benefits of Artificial Intelligence that enables businesses to analyse consumer behaviour, diverse needs and create personalised marketing content to cater the needs of customers. This study discusses various AI tools of customer segmentation and investigates how artificial intelligence (AI) is being used by the cosmetic industry. Data was gathered through secondary research methods such as books, journals, publications etc. With technology becoming more and more linked with personal care and beauty, this research attempts to analyse the complex interaction between AI interventions and consumer Perception and behaviour. Through the utilization of artificial intelligence (AI) technology, enterprises may examine vast quantities of consumer data and identify trends that facilitate enhanced understanding of their target audience and the delivery of persuasive marketing messages.

**Keywords**: Customer segmentation, Targeting, Artificial intelligence, Cosmetics, Consumer behaviour

**Introduction:**

 **Customer segmentation:**

According to Kotler and Armstrong (1999), market segmentation is the process of breaking a market up into discrete consumer groups with varying demands, traits, or behaviours. These groups may need different goods or may react differently to different combinations of marketing activities. The following segmentation grounds are: psychographic, behavioural, demographic, and geographic. Additional variables that might be employed in segmentation include situational factors (such the occasion of a purchase or use), as well as consumer preferences for particular product attributes. In order to effectively segment a market, each segment must typically be assessed based on a set of criteria, including rigidity, potential for further development, size, accessibility, reactivity, and whether or not the customers in that segment and the marketing efforts aimed at them align with the goals and resources of the company (i.e., whether the segment is "actionable").

Consumer segmentation is essential due to scarce resources and has to concentrate on how to effectively and efficiently cater the needs of consumers. If the nature of group is homogeneous, it helps in taking marketing initiatives in comparable manner.  As a result, businesses may allocate marketing efforts to each category more effectively.  Businesses are only encouraged to perform and administer segmentation strategies if they have a promising net payback in mind. Therefore, consumer segmentation plays a crucial role in the formulation of marketing goals. When establishing those goals, the following are often included (Ansoff, 1957; McDonald & Dunbar, 2004): (a) a review of present consumer segments to determine how products should be manufacture, construct or marketed; or (b) the discovery of new segments to target for the making of new goods or the diversification and expansion of existing ones. Every customer is different from one another, having distinct requirements, needs, tastes and behaviour. Customer segmentation plays an important role in which large target market is divided into customer groups such as demographics, Psychographic, Geographic and behavioural. These consumer segments have common characteristics that helps the marketers in better understanding and customise campaigns that appeal to certain consumers. Customer segmentation, or the grouping of customers based on similar characteristics, is necessary to create custom-made marketing tactics and meet the specific needs of customers. Advances in artificial intelligence (AI) have revolutionized customer segmentation, enabling target customers more precisely and get more comprehensive understandings. Artificial intelligence (AI) makes it possible to speedily analyse massive amounts of data in order to identify emerging trends and patterns. The use of AI to customer segmentation not only improves the customer base but also increases opportunities for growth potential. Using AI into your customer segmentation strategy may improve customer happiness, create more effective marketing efforts, and eventually increase the sales and profits, Whereas, targeting is the process of reducing or breaking down the target market to more manageable customer segments based on shared characteristics and focusing more on specialized promotional activities on them. With the use of data sets and underlying patterns, AI can construct extremely detailed client categories i.e. Behavioural segmentation: The ways in which consumers engage with your brand (frequency, rate, degree of purchases, etc.), need-based segmentation: Customers’ needs and problems are different from one another. Greater comprehension of the driving forces and tendencies of the consumer is made possible by the degree of segmentation.

**Components of customer segmentation**

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| **Geographic: Region, country, city, state** |
| **Demographic: Age, gender, family size, income, occupation, education, nationality** |
| **Psychographic: lifestyle, personality, social class, values and Interests** |
| **Behavioural: Benefits, Occasion, user status, usage rate, loyalty status** |

**Artificial Intelligence**

Artificial intelligence (AI) systems are able to execute activities that usually require human intellect by analysing large datasets, finding projects designs and form structures, and making judgments via the use of algorithms and modern computation. A kind of artificial intelligence called machine learning gives systems the ability to get more efficient on their own through time. Applications of AI is being used in wide range of areas including healthcare, banking, education, and entertainment. AI improves effectiveness, precision, and creativity in a variety of sectors, from voice recognition and computation of images to autonomous automobiles and recommendation engines. As society depends more and more on smart technology, which raises ethical questions and highlights the need for responsible research and use.

**Consumer Behaviour**

Consumer behaviour is the term used to describe the activities and thought processes people go through when they look for, buy, use, and discard goods and services. Businesses must understand customer behaviour in order to rightly promote their products. Individual likings, attitudes, and impressions are just a few examples of the factors that greatly influence what people decide to buy. Online platforms and innovation have a greater impact on buying habits in the current day. Online networking, digital platforms, convenience, affordability of information have empowered consumers, allowing them to share their experiences and knowledge with a global audience and make better decisions. In general, companies must analyse consumer behaviour which helps in constructing marketing plans and maintaining customers satisfaction level.

**Methodology:**

In this study, secondary research is the strategy employed to gather data from previously published sources. For the purpose of making the research effective, data was gathered for the use of artificial intelligence tools in the cosmetics sector and customer segmentation and targeting from the Internet, which contains research papers, articles, Journals and Publications etc.

**Objectives:**

1. To discuss the benefits of Artificial Intelligence in customer segmentation and Targeting
2. To discuss Artificial intelligence tools for customer segmentation.
3. To investigate the potential applications of Artificial intelligence on Cosmetics Industry.

**Literature Review:**

**Shaik, M. (2023).** Marketing is one of the industries where artificial intelligence is most useful since it helps to improve performance. Strong understanding of AI and its use in marketing was provided by the extensive literature review that was highlighted. Secondly, the investigator used a qualitative research approach that included of semi-structured interviews with marketing experts from multiple Indian enterprises. Fifteen marketing experts were selected as the sample size by the researcher for interviewing.

**Jain, P., & Aggarwal, K. (2020).** Examined the idea of using artificial intelligence in marketing. It offers detailed information on the advantages of using AI in marketing, how AI is changing marketing, and why AI is essential for marketing, all of which are supported by actual cases from various industries. This study includes a part devoted to the use of various AIM methods. The authors have done extensive research on the effects of AIM technology at every stage of the customer life cycle. Furthermore, an extensive and region-specific analysis is provided.

**Elder, A. et al. (2020)**. The research highlights recent and emerging uses of AI in cosmetic dermatology while also offering predictions for further developments. websites and peer-reviewed journal papers were used for the literature review. With the development of technology, artificial intelligence models are becoming more and more useful in cosmetic dermatology, artificial intelligence is being promoted to both doctors and patients in a number of novel ways.

**Mangtani, N., Bajpai, N., Sahasrabudhe, S., & Wasule, D. (2020).** The research paper highlights the significance of augmented reality and artificial intelligence for personal care after COVID-19, as well as the many types of instrumentation already available in the market. Results showed that artificial Intelligence has the potential to aid in the identification of skin conditions and facilitate the creation of customized beauty products for consumers. By doing this, post-COVID operations in the cosmetics and beauty industry will be safe and disease-free.

**Chakraborty, D. et al. (2024).** The research examines the uses of artificial intelligence (AI) technology in the beauty and cosmetics industry (BCI), with a focus on augmented reality (AR) and virtual reality (VR). It looks into how AI-enabled BCI solutions can change the industry. This study fills this gap by dividing AI affordances into four categories: existence, perception, actualization, and consequence. This allows for the development of a conceptual framework based on AI affordances. A quantitative study was conducted on 866 users with 177 user testimonies. Results revealed that all three aspects of affordance perception were significantly positively impacted by perceived relative advantage. Additionally, the readiness to adopt conventional means for purchasing beauty and cosmetic products was considerably favourably impacted by all the affordance perception factors.

**Ustymenko, R. (2023).**  Research explores various aspects of cosmetic marketing's development, illuminating new developments that are changing the way cosmetics are marketed and seen. Its goal is to pinpoint the primary trends in the cosmetics industry and investigate in detail how these trends can affect marketing tactics in the future. Thorough literature research was conducted to monitor market narratives, statistical analysis was employed to interpret market dynamics and projections, and a comparison approach was employed to determine the relative importance of each trend. Examining the data in more detail revealed that the emphasis on the clarity and openness of product components was a key trend. It is believed that future marketing methods will be based on brand loyalty, which is supported by moral and environmentally friendly behaviour.

**Ameen, N., Tarhini, A., Reppel, A., & Anand, A. (2021).** The purpose of this study is to examine how incorporating AI into purchasing might enhance the AI-enabled consumer experience based on the service quality model and trust-commitment theory. Partial least squares structural equation modeling was used to analyse a total of 434 replies. The results show that perceived sacrifice and trust play a crucial role in moderating the relationships between perceived convenience, personalization, and the quality of AI-enabled services. The results also show that relationship commitment has a major impact on the AI-enabled user experience.

**Mandapuram, M., Gutlapalli, S. S., Reddy, M., & Bodepudi, A. (2020).** The relationship has been formed between market segmentation and artificial intelligence (AI) as a result of recent industry advances. The methods for using AI to generate apps are being developed simultaneously with the proposals. Digital marketing has shown to be a valuable tool for firms, increasing client engagement through genuine application of marketing science. To do this, a variety of digital and electronic services are used. This article will define artificial intelligence (AI) and explain how the field's recent advancements have affected market segmentation's growth and development. This article also looks at how the many AI approaches and techniques that are now on the market impact the tasks and operations of sales and marketing.

**Zulaikha, S. et al. (2020).** The identification of a target audience by artificial intelligence (AI) was the only emphasis of this conceptual study. This study focused on the marketing environment and gave an organized overview of how AI can accurately identify the target consumers despite their disparate actions. Additionally covered were the uses of AI in consumer targeting and its anticipated efficacy at each stage of the customer lifecycle. It is possible to obtain behavioural insights about specific clients more effectively and dependably by using historical analysis. The literature research verified that technology-driven artificial intelligence (AI) is transforming marketing by enabling large-scale data processing through supervised or unsupervised (machine) learning.

**Malesević, V., Kojić, N., & Savić, A. (2014).** This study aims to demonstrate that every online user has human needs and possibilities connected to those needs visiting the website customized for his own metaprogram requirements. This has the impact of "relaxed buyer" and reduces the time it takes to find the "right information". However, this marketing idea may turn online mass marketing into "face-to-face" sales in a way that is considerably more compassionate and environmentally friendly while also cutting marketing expenses.

**Benefits of Artificial intelligence in customer segmentation and targeting**

It's critical to understand and comprehend the needs of customers in the era of digital marketing. The days of segmenting and targeting customers using traditional ways are fast approaching. Then along comes artificial intelligence (AI), a game-changer that makes these procedures more accurate and efficient. Let's explore how AI improves customer targeting and segmentation.

* **Recognizing Targeting and Customer Segmentation**:

 The process of identifying and segmenting customers (existing and potential) into groups based on similarities in characteristics is known as customer segmentation. The next step in creating targeted marketing strategy for these categories is targeting. In targeting, it is the process of breaking down the target audience and then creating strategies that will reach to those individuals who are most likely to react to your efforts.

 By doing this, marketing initiatives are made more successful, tailored, and relevant.

* **The Use of AI in Targeting and Segmenting Customers:**

 AI analyses enormous volumes of customer data by utilizing predictive modeling, data analytics, and machine learning algorithms. Patterns and insights are revealed by this study. • Recommendation algorithms: AI makes recommendations for goods or services based on the preferences of each market group.

* Flexible and Innovative information: Information for different social media platforms can be crafted for making communication useful and appeal to audiences.
1. Real time data analysis: AI helps in making well-informed decisions by using artificial intelligence (AI) algorithms for real-time data analysis. These algorithms enable firms to identify hidden patterns, associations and relationships, and movements within the data they collect. AI enables the businesses more responsive and also helps in decision making process.
2. Quick decision making: Artificial intelligence can minimize human errors and allowing organizations to analyse any inconsistencies and helps in ensuring more accurate and make informed decisions quickly.
3. Scalability: It refers to the ability of data models, infrastructures, organization structure and algorithms to change at scale in terms of difficulty, speed, or size to best meet the demands of the given scenario. Scalability increases revenues, returns and create better customer base and perform tasks effectively and efficiently.
4. Increases efficiency and customer experience: Chatbots helps in providing better customer service by promptly answering frequently asked inquiries. AI driven personalization helps customers access products or services they want and human agents are free to focus on complex problems. It increases user engagement, increasing sales and delivering enhanced customer service.
5. Data storage and processing: Huge dataset processing and storage are made easier by big data technologies like Spark and Hadoop. The availability and approachability of the data for AI algorithms is definite by this infrastructure.
6. Optimum utilization of resources: Businesses may optimize their return on investment by allocating resources in optimum way and improve the performance of their marketing initiatives by concentrating their efforts on high-value groups.
7. Analytical forecasting of future trends: AI is able to predict the choices and tastes of customers by evaluating both using previous and current data. Businesses may proactively modify their plans by foreseeing changes in the market trends to these predictive capabilities.
8. Consumer involvement: Businesses can use the control of artificial intelligence and categorise consumers on the basis of needs, Interest and actions. This makes it possible to target marketing efforts and raises consumer involvement and revenue.
9. Artificial intelligence helps in retaining existing customers: Businesses can predict consumer behaviour and retain existing customers by analysing previous history. It also enhances user engagement.
10. Artificial intelligence and personalization: Artificial intelligence enables businesses to create personalised marketing content to cater the needs of customers.

**How does consumer segmentation powered by artificial intelligence operate?**

* Using data to improve segmentation tasks:

To use different kinds of data to identify different consumer groups. These may include financial data, Psychographic data etc. Marketers may obtain information from social media platforms, Customer relationship management software. It is imperative to give more significance to data reliability, Authenticity, Confidentiality compliance.

* Buyer Persona: Artificial intelligence helps the marketers to find common traits, Interest within each category which may help the organisation in creating comprehensive and more equipped to customise their message. Marketers can enhance customer engagement through corporate strategies with the requirements of targeted consumer segments.
* Artificial intelligence algorithms: Artificial intelligence technologies apply algorithm to examine transactional, behavioural and demographic data to extract insightful information. Marketers can also assess customer data, discover structure and design and monitor the behaviour of consumers.
* Advanced Analytics and behaviour analysis: Behaviour analysis is a crucial part of advanced Analytics in which artificial intelligence algorithms use to find predicted indications of consumer activities and Advanced analytics use past data to forecast future consumer behaviour.

**AI tools for Customer segmentation**

The segments might be based on a variety of characteristics, including place, commerce, or population The technology sector offers tools to help firms with better communication and marketing through integrated consumer segmentation:

1**.Peak**: Peak is a powerful artificial intelligence tool designed to streamline customer segmentation by segmenting maps and smart segments. One may get detailed information about the customers using Peak's Audiences application. In order to provide a non-siloed, comprehensive picture of your consumers, it accomplishes through incorporating AI models to your campaign, transactional data, and customer records. Make use of these information to develop automated multichannel marketing, look alike audiences, and more precise targeting.

Features: Centralized location: It gathers data from several sources and places it in one place.
Customer relationship management: Able to work with current CRM systems.

Customer groups can be visualised on the basis of attributes such as age, location, gender etc.

2.**Klynk**: Klynk stands out as an artificial intelligence tool that focuses on crafting marketing campaigns and personalised marketing processes. Its copilot bot helps in generation of content and for business it is a valuable asset to increase their marketing efficiency.

Features: It provides the ability to build automated marketing campaign.

It helps in crafting emails with correct tones and subject headlines.

3.**Heap**: Heap focuses on analysing user behaviour and providing real time insights into customer interaction.

Features: It helps in understanding the user behaviour of consumers from different online platforms and representing with the help of heat maps and charts.

4.**Opti move**: Opti move is a comprehensive Artificial intelligence tool which focuses on increasing brand loyalty, trustworthiness and generating revenue. Optimus helps in creating long lasting relationships with the customers and identify opportunities for growth potential.

Features: It focuses on those strategies which helps in improving brand loyalty through marketing campaigns.

It supports multi -channel communication to reach diverse audience and fulfil their needs and wants.

It analyses customer data to identify the opportunities for revenue generation.

5. **Hub spot AI**: HubSpot is an AI-driven customer platform that comes with all the tools, resources, and connectors that link company’s sales, marketing, revenues and customer support. With HubSpot's integrated platform, company grow faster and focus on customers’ needs and wants.

6. **Blast Point**: Business teams may access customer insight using Blast Point’s AI-powered segmentation and personas, enabling you to build customized customer experiences on a large scale.

Features:
Better outcomes are achieved by Blast Point’s results-focused. In-house developed customer intelligence engine predicts precisely who you should target and how to excite them by segmenting data into meaningful categories that highlight consumers. It makes easy for business users to access and operationalize data once created segments.

7. **OTRACKER**: OTRACKER is a artificial intelligence tool made for accurate consumer segmentation in the ever-changing world of customer engagement. OTRACKER enables strategic corporate decision-making by providing information about user behaviour through the application of sophisticated capabilities.

8. **Google Analytics**: It is a platform provided by Google in which data collected from various applications and websites. It helps different brands by offering new insights on the number of visitors, their behaviours, buying decisions, place, gadget used, and a variety of other factors.

9. **Mix Panel:** It is a tool that gathers information on digital products and user behaviour. It aids in the analysis of visitor traffic on web platforms. Mix panel enables monitor consumer interaction, actions, or additional categories with a specific item. After monitoring, It helps in organize tailored content and campaigns based on segmentation as well as examine the segmentation effectiveness and progress reports.

10.**Intercom**: It is designed to help the company handle difficulties more quickly, as well as one of the most significant consumer segmentation tools accessible. The end result is client happiness and a reduced workload for the personnel. The application aids in web visitor analysis, which leads to focused content.

11.**Optimizely**: It’s usefulness and services concentrate on the marketing and product departments aiming to maximize the user experience on the internet. They offer website customized services, organizing content, along with additional functions.

12. **Segment**: It enables the gathering, simplifies data, dissemination, and keeping information about customers. It allows monitoring irrespective of the gadget's type used. It begins with buildings database and evaluate the cause for segmentation then Engage customers in subgroups for information and change the segments according to the requirements.

13. **Content square**: Content square is a comprehensive online user experience that combines qualitative and quantitative techniques such as session replays, customer experience, and product evaluation for showing how people interact with your product.

14. **Qualtrics XM**: Using Qualtrics XM, categorize consumer data for targeted campaigns. In this, modern user experience management application gathers transaction information from consumers, staff members, and interaction with the brand.

**Applications of AI on cosmetic Industry:**

1. Virtual Makeup try on: It improves and supports beauty experience by creating a highly reliable and trustworthy virtual makeup application using augmented reality technology. For this reason, L'Oréal Paris has combined artificial intelligence and augmented reality to deliver you a revolutionary solution.
 A complex face-tracking approach is used to identify facial highlight points utilizing various "technologies of the time."
2. Personalized System: The next frontier in skincare and cosmetics development is the application of AI. Leading the way in the skincare industry for AI face beauty is PROVEN. It provides a comprehensive depiction of each person's skin health and to identify specific skin types and issues. They also provide highly tailored products with actual results because of AI beauty technology. One efficient approach to address the specific requirements of skin is by using AI tools for skincare customisation. Also, this technology may take into account the preferences of the customer, such as choosing AI-powered tailored skincare suggestions have been introduced by companies including Proven and customers have responded positively to these efforts.
3. Predictive analytics: Predictive analytics uses AI to change unprocessed data into valuable knowledge. For example, a predictive model can estimate future purchase trends by assessing past consumer activity. Machine learning (ML) models and algorithms are used in AI predictive analytics. These models can recognize patterns and correlations. A well-known Indian cosmetics company LAKME used predictive analytics to forecast trends and develop marketing strategies for the introduction of new products.
4. Virtual consulting: With the use of artificial intelligence (AI), virtual assistants can diagnose skin conditions and make personalized product recommendations in real time. For instance, Olay provides a virtual assistant called "Olay Skin Advisor" that helps users to select the suitable products.
5. Product simulation: Simulations are computer models which helps in all phases of product design and product verification. Using augmented reality technology, customers may use "try on" cosmetics and see how an anti-aging lotion would alter their skin tone before making a purchase. Mary Kay and Maybelline provide this technology.
6. Product recommendation: AI makes personalized product recommendations based on user preferences, purchasing history, skin type, etc. With the use of this technology, Sephora offers a customized shopping experience through its application.
7. Digital Listening Tools: For instance, MAC Cosmetics, a well-known company in India, may track brand mentions, evaluate sentiment, and obtain data to inform their social media marketing tactics by utilizing social media listening tools driven by AI.
8. Market trend Analysis: Himalaya Herbals, a well-known Indian herbal cosmetics firm manufactures health care products containing ayurvedic ingredients by using AI-driven platforms for data analytics to keep a check on market trends, examine customer behaviour, and get useful information for marketing choices.
9. Augmented reality: L'Oréal introduced "Modi Face" in 2018, a virtual application of the product and operates in real time. Everyone involved in augmented reality planning to improve realism, precision, and concentration while put it an application on face.

**Future Scope:**

Customized beauty appears to have a bright future as long as technology keeps developing. Artificial Intelligence (AI) algorithms have the potential to transform the cosmetics business by providing tailor made and different findings that meet the demands and requirement of individual consumers. Businesses may offer customized beauty experiences that connect with customers by applying AI tools, which will promote brand loyalty and growth in the cutthroat cosmetic sector. AI-powered marketing technologies helps in constructing more dynamic and interactive ads. Artificial Intelligence (AI) technologies help to monitor and convey a brand's commitment to sustainable and ethical practices.

**Conclusion:**

With its better accuracy, real-time data processing, better customisation, and higher efficiency, artificial intelligence (AI) is transforming consumer segmentation and targeting. Businesses may use AI to better understand consumer behaviour, develop more successful marketing campaigns, expansion and success. AI technology's influence on consumer targeting and segmentation will only grow as it develops further. AI may also promote innovation in the cosmetics industry by enabling companies to create original, creative products that meet the constantly ever-changing wants of their customers. There is a bright future for AI in the beauty industry, but there are still some challenges to be solved, such the requirement for larger and more diverse datasets.

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