

ARTIFICIAL INTELLIGENCE IN COSMACEUTICAL TECHNOLOGY**Nitesh*¹, Navneet Kumar Verma², Shekhar Singh²**^{*1}Student of B.Pharmacy, Suyash Institute of Pharmacy, Hakkabad, Gorakhpur, Uttar Pradesh, India-273016.²Associate Professor, Suyash Institute of Pharmacy, Hakkabad, Gorakhpur, Uttar Pradesh, India-273016.***Corresponding Author: Nitesh**

Student of B.Pharmacy, Suyash Institute of Pharmacy, Hakkabad, Gorakhpur, Uttar Pradesh, India-273016.

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ABSTRACT

Innovation and technology have always been the driving forces behind the beauty and cosmetics sector, which is continually looking for new ways to enhance goods and services for customers. Artificial intelligence (AI) has become a potent instrument in recent years, transforming many facets of the beauty industry and improving the customer experience. AI seems to be a way to deal with the complicated environment, which is why beauty organisations need to make data-driven judgements about their plans in order to stay competitive. Beauty firms and merchants can now analyse enormous volumes of data, make precise forecasts, and provide individualised solutions thanks to AI algorithms, machine learning, computer vision, and natural language processing tools.

KEYWORDS: Artificial Intelligence, Beauty, cosmetics.**INTRODUCTION**

Due to customer demand for new goods, services, and technologies, the beauty business has been steadily expanding and changing. The beauty business has always been at the forefront of innovation and invention, whether it is in skincare, makeup, haircare, or scent. The sector is changing as a result of the application of technology, especially artificial intelligence (AI), which is creating new chances for expansion, improvement, and personalised client experiences.^[1] Artificial intelligence has a lot of potential in the beauty industry, ranging from customised product suggestions to virtual try-ons and skin analysis. A person's skin type, tone, and other characteristics can be analysed by AI so that it can suggest items that will work best for them. With the help of artificial intelligence (AI), a person may virtually try on various items to see how they appear on them before making a purchase. Skin analysis makes customised recommendations for skincare regimens and products after analysing a person's skin using AI technology. The expansion and innovation of the beauty business have been facilitated by the development of AI. In 2020, it was projected that the global market for personal care and beauty goods would be valued \$488.7 billion. From 2021 to 2028, the industry is expected to grow at a CAGR of 6.3%. The growth of the beauty industry is projected to be propelled by AI-powered beauty goods

and applications in the years to come. AI has the potential to enhance the consumer experience, operational effectiveness, and product creation in the beauty industry. With the help of AI, which can help personalise and customise experiences and products, a new era of truly personalised beauty may be established.^[2]

Role of Artificial Intelligence

AI is not a system, but a system has Artificial Intelligence. Different systems of Artificial Intelligence are responsible for different goals - vision, learning and decision making. And to achieve these revolutionary goals it uses components. Beauty brands are now leveraging the latest advancements in artificial intelligence and machine learning (AI/ML), augmented reality and virtual reality (AR/VR), data and analytics, cloud computing, and the internet ustry enable more individualised customization.^[3] The beauty industry has always been driven by innovation, and one of the latest technological advancements that is transforming the industry is computer vision. Computer vision, a branch of artificial intelligence (AI), focuses on teaching computers to interpret and understand visual information from the world, and it is changing the way beauty brands and consumers interact with beauty products and services.^[4]

AI applications in Beauty Industry

The world faced Covid-19 pandemic and it had impacted all the sectors, and the beauty market is no exception. There is now an opportunity for beauty brands to increase their investment on digital solutions. Artificial Intelligence can offer clear advantages on this domain, exploring new e-commerce solutions and online engaging experiences. AI is the biggest window of opportunity to the beauty industry. Many beauty companies are already applying AI but right now, it is good time to scale and drive innovation on this sector. The newest launch is SkinGPT, a generative AI skincare and skin modelling tool that allows users to see the future of their skin (Haut.AI SkinGPT), the technology company powers over 200 brands in the virtual shopping environment (AVA by Obsess), the inclusion of Clear For Me's clickable technology and database of over 1.8 million ingredients will allow beauty advisors to discover products by searching for ingredients on the Beauty Fluent app, the AI-powered SaaS platform provides brands and retailers with a one-stop, customizable solution for integrating user-generated content (UGC) across marketing channels (Hue) are examples that the industry is part of the digital transformation.^[5-6]

Benefits of Artificial Intelligence in the Beauty Industry:

1. Personalization: AI allows brands to offer personalized recommendations to consumers based on their unique needs and preferences. This personalized approach can lead to increased customer loyalty and satisfaction.
2. Efficiency: AI can help brands to optimize their production processes and inventory management, reducing waste and increasing efficiency.
3. Innovation: AI enables brands to develop innovative products and services, such as virtual try-on, that differentiate them from their competitors.^[7]

Challenges of Artificial Intelligence in the Beauty Industry

1. Privacy: The use of AI in the beauty industry raises concerns about consumer privacy, as facial recognition technology is often used to detect the user's face.
2. Bias: AI algorithms can be biased, which can lead to inaccurate recommendations and exclusion of certain groups of consumers.
3. Cost: The implementation of Artificial Intelligence technology can be expensive, which may be a barrier for small businesses and startups.^[8]

The beauty industry is constantly evolving and adapting to new technologies to improve the customer experience and to provide innovative solutions for skincare and beauty problems. Artificial intelligence (AI) is one of the latest technological advancements that is being widely researched in the beauty industry to improve the accuracy of skincare and beauty solutions. The use of Artificial Intelligence in the beauty industry has the

potential to revolutionize the industry and make it more accessible to consumers.^[9]

Improved Accuracy of Beauty Solutions

The second objective of research on the use of Artificial Intelligence in the beauty industry is to improve the accuracy of beauty solutions. AI algorithms can analyse large amounts of data and identify patterns and trends that may not be apparent to humans. This can help beauty companies to develop more accurate and effective solutions for skincare and beauty problems.

For example, Artificial Intelligence can be used to analyse the ingredients in skincare products and determine which ones are most effective in treating specific skin concerns. This can help beauty companies to develop more effective products that are specifically tailored to the needs of their customers.^[10]

Efficiency in Product Development

The third objective of research on the use of Artificial Intelligence in the beauty industry is to improve the efficiency of product development. Artificial Intelligence can be used to simulate the effects of different ingredients and formulations on the skin, which can help beauty companies to develop new products more quickly and cost-effectively. This can enable beauty companies to bring new products to market faster and stay ahead of the competition.

Enhanced Customer Experience

The fourth objective of research on the use of Artificial Intelligence in the beauty industry is to enhance the customer experience. Artificial Intelligence can be used to create chatbots and virtual assistants that can help customers find the right products and provide personalized recommendations. This can improve the customer experience by providing customers with quick and convenient access to beauty solutions.

Additionally, Artificial Intelligence can be used to provide virtual try-on services that allow customers to see how different makeup products will look on their skin before making a purchase. This can help customers to make more informed purchasing decisions and reduce the likelihood of returns.

Improved Sustainability

The fifth objective of research on the use of Artificial Intelligence in the beauty industry is to improve sustainability. Artificial Intelligence can be used to optimize supply chain management and reduce waste by predicting demand and optimizing inventory levels. This can help beauty companies to reduce their environmental impact and improve sustainability. Artificial Intelligence can be used to develop more sustainable products by analysing the environmental impact of different ingredients and formulations. This can help beauty companies to develop products that are more eco-friendly and appeal to customers who are concerned

about sustainability. AI's Potential Impact on the Future of the Beauty Industry The potential impact of Artificial Intelligence on the future of the beauty industry is vast. One area that Artificial Intelligence could revolutionize is the development of new products. By analysing customer data and predicting trends, Artificial Intelligence could help beauty companies create innovative products that meet customer demands. Artificial Intelligence could also transform the way beauty services are provided. For example, Artificial Intelligence - powered robots could perform beauty treatments like facials and massages, freeing up staff to focus on other areas of the business. The use of Artificial Intelligence could also help reduce the cost of beauty services, making them more accessible to a wider range of customers. Artificial Intelligence could also enable beauty brands to become more sustainable. By analysing data on ingredient sourcing and production processes, Artificial Intelligence could help companies identify ways to reduce waste and become more environmentally friendly. This could include using more sustainable ingredients or adopting more efficient manufacturing processes.

Scope for future research

- 1) Based Color Matching: The app could use Artificial Intelligence algorithms to accurately match makeup products, such as foundation shades, lipstick colors, and eyeshadow palettes, to the user's skin tone and undertones. The app could take into account various factors, including lighting conditions, skin undertones, and personal preferences, to provide precise color matches.
- 2) AI-based Beauty Community: The app could create a virtual beauty community where users can share their makeup looks, skincare routines, and hair care tips. The community could be powered by AI algorithms that provide personalized recommendations, facilitate discussions, and connect users with similar interests and beauty goals.^[11]
- 3) Sustainability and Ethical Beauty: The app could incorporate features that promote sustainability and ethical beauty practices, such as recommendations for cruelty-free, vegan, and eco-friendly beauty products. The app could also provide information on the environmental impact of cosmetic products and offer sustainable beauty tips and routines.

These are just a few ideas for potential future features of Artificial Intelligence -based cosmetics apps. As technology continues to evolve, the possibilities for leveraging AI in the cosmetics industry are vast, and further research and development could uncover even more innovative features.^[12]

CONCLUSION

Artificial Intelligence is revolutionising the beauty business in a number of ways, from the development of cutting-edge services to the production of customised goods. The future of the beauty business could be greatly

impacted by Artificial Intelligence technology as it develops further. Businesses in the beauty industry who use Artificial Intelligence -powered solutions are probably going to have an advantage over those that don't. It will be intriguing to observe how Artificial Intelligence continues to influence the cosmetics sector in the upcoming years.

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