

# APPLICATION OF AI IN THE FUTURE FASHION DESIGN

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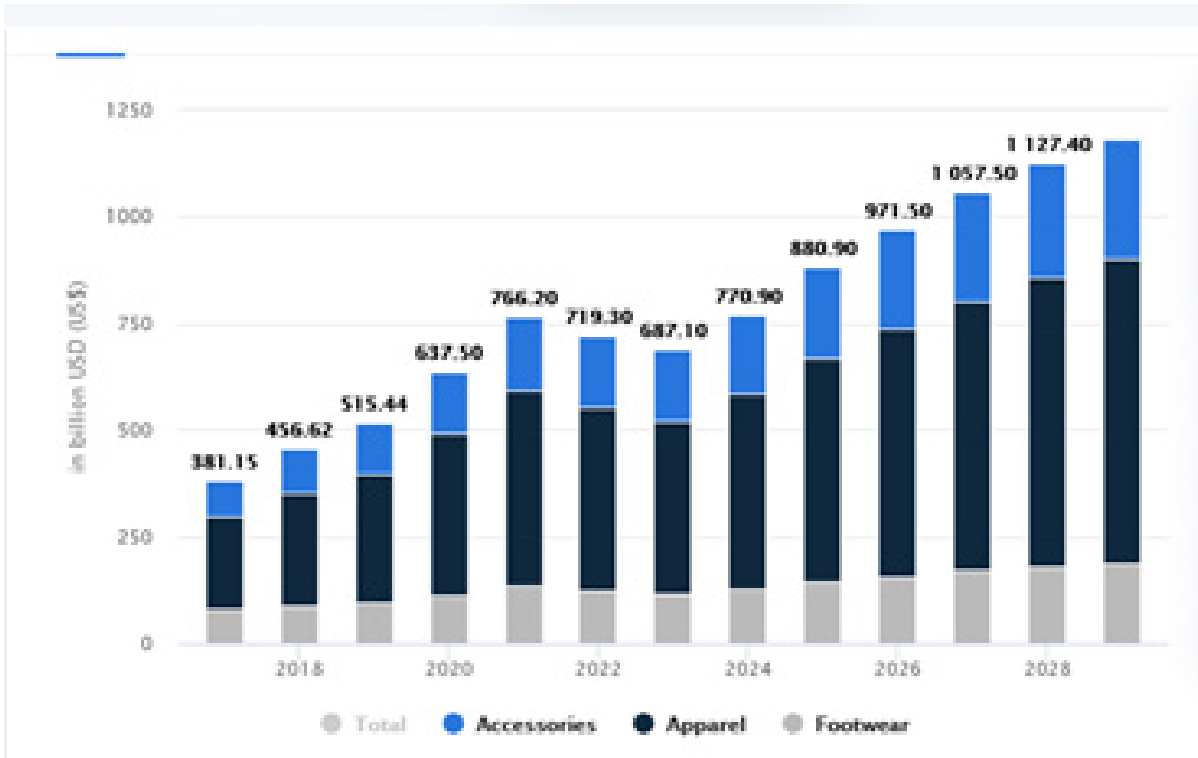
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# INTRODUCTION:

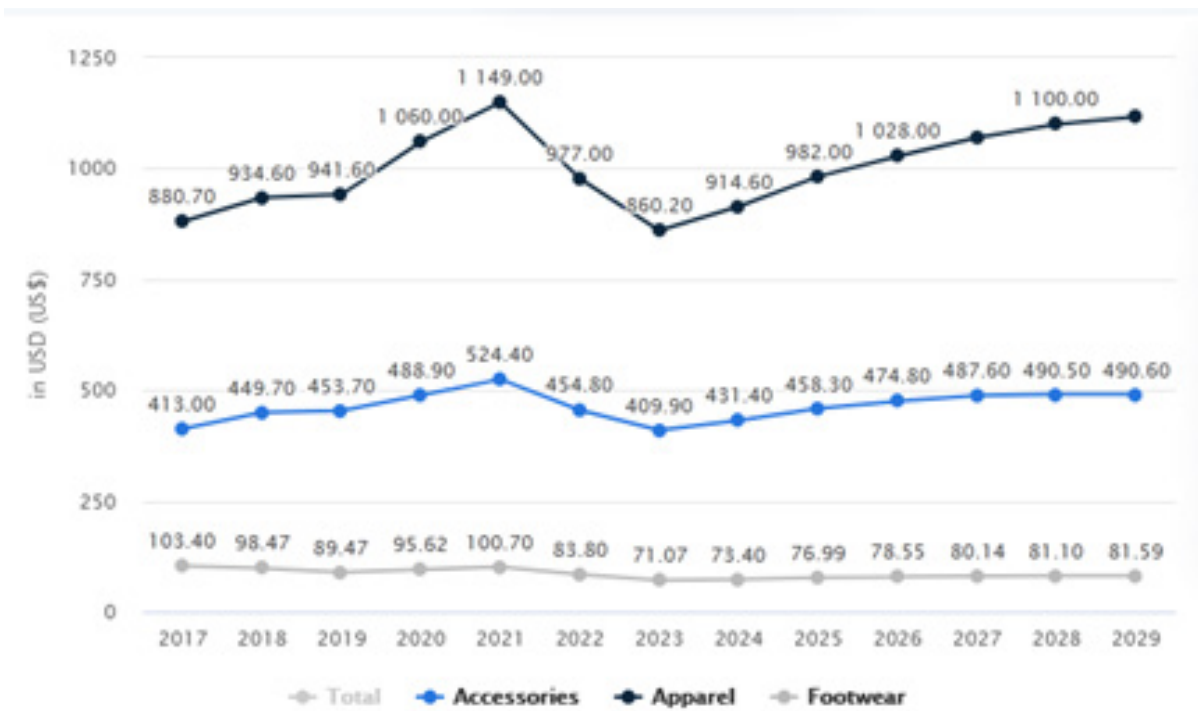
Artificial intelligence and its many numbers of fields i.e. are powerful tools that can be applied to every step of the fashion, starting from idea generation to the source of materials, production, logistics and retailing & marketing. It is a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for successful business. AI technologies are transforming the fashion industry in every element of its value chain such as designing, manufacturing, logistics, marketing and sales (Anonymous 2024). The domestic apparel & textile industry in India contributes approx. 2.3 % to the country's

GDP, 13% to industrial production and 12% to exports. India has a 4% share of the global trade in textiles and apparel. (Anonymous 2024a) If we talk about fashion market in the world the revenue in the Fashion Market is projected to reach US\$770.90bn in 2024. Revenue is expected to show an annual growth rate (CAGR 2024-2029) of 8.94%, resulting in a projected market volume of US\$1,183.00bn by 2029. With a projected market volume of US\$236.80bn in 2024, most revenue is generated in China. In the Fashion Market, the number of users is expected to amount to 2.8bn users by 2029. User penetration will be 33.3% in 2024 and is expected to hit 37.8% by 2029.





Graph1: World the revenue in the Fashion Market



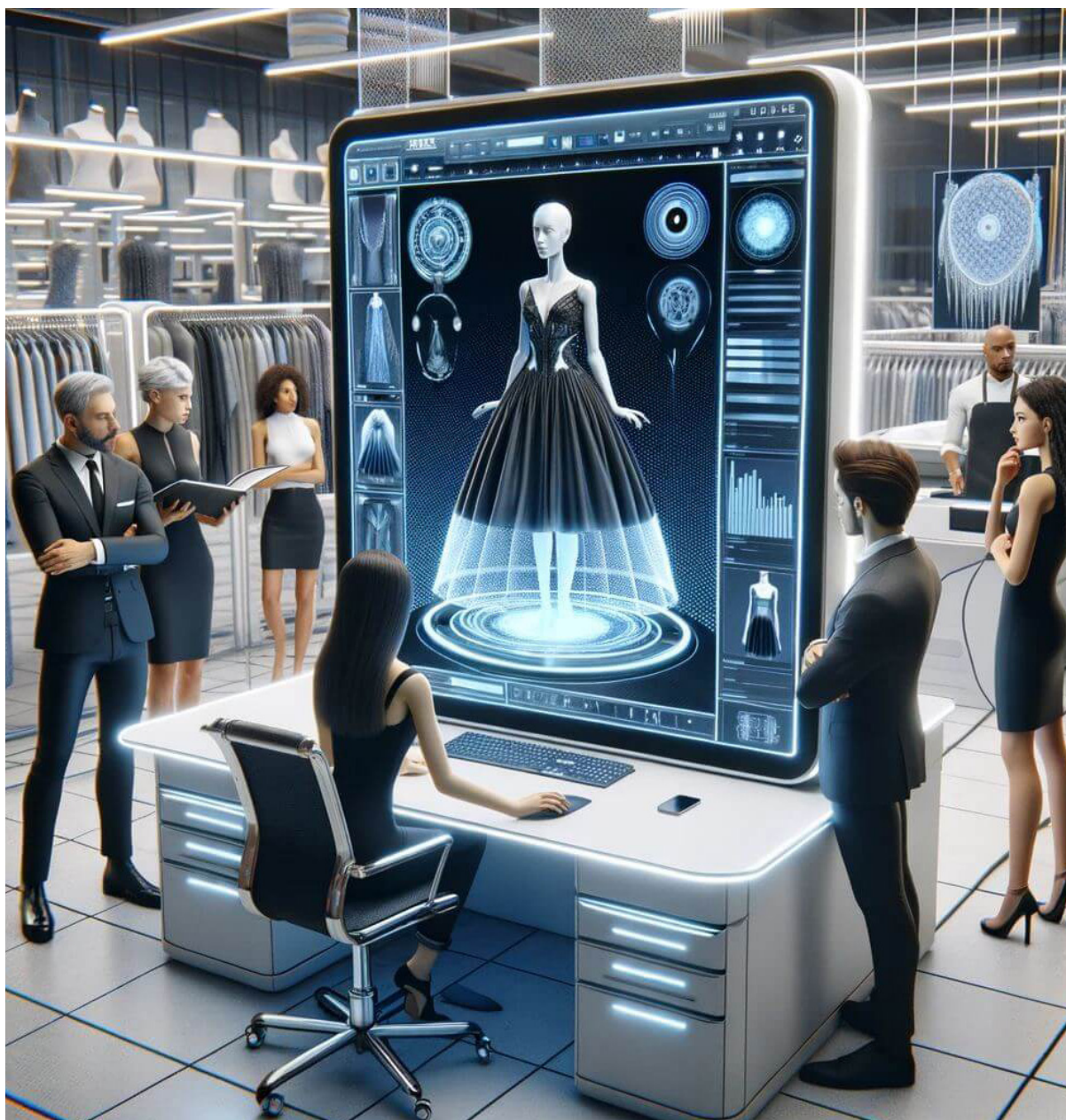
Graph 2: The number of users in fashion world market

# NEED FOR AI IN THE FASHION INDUSTRY:

The fashion industry faces several challenges that demand innovative solutions to stay competitive in today's fast-paced world. By harnessing the power of AI, the fashion industry can not only survive but thrive in an increasingly competitive landscape. AI has emerged as an innovative force that can address these issues.

Let us discussed how AI can help overcome them.

- **Rapidly changing trends:** Fashion trends change at an various pace, making it challenging for designers and retailers to predict the consumer preferences perfectly. This unpredictability can lead to overproduction, excess inventory, and waste generation.



- **Inventory management:** Managing inventory well is a constant struggle. Retailers often struggle with stock outs or excess inventory, leading to missed sales opportunities and economic losses.
- **Personalization:** Consumers are increasingly seeking personalized experiences and products. Traditional approaches to customization are time-consuming and pricey, limiting their scalability.
- **Sustainability:** The fashion industry is under growing scrutiny for its environmental impact. Reducing waste, implementing sustainable materials, and ethical manufacturing practices are crucial concerns.
- **Forecasting:** Accurate demand forecasting is vital for planning production, but it remains a complex task due to various factors influencing consumer behaviour, economic, crisis etc.
- **Marketing and advertising:** Reaching the right target audience with effective marketing strategies is a significant challenge, especially in the digital age with numerous platforms and channels.

For beauty businesses, generative AI also provides an opportunity for brands to identify new product formulations, potentially helping to reduce lab testing costs.



## APPLICATION OF AI IN FASHION

The application of AI in Fashion is not just theoretical but is clearly illustrated by several pioneering examples:



- Stitch Fix employs AI to refine its personal styling services, using algorithms to match customers with clothing that fits their style, size, and preferences, thereby revolutionizing online shopping experiences.
- The Fabricant, a digital fashion house, creates high-quality digital clothing through AI, challenging the traditional notions of fashion consumption and production.
- Adidas has harnessed AI for its Speedfactory, using automated manufacturing processes to create customized footwear, demonstrating how AI can bring unprecedented levels of customization to mass production.



# PRODUCT DEVELOPMENT AND INNOVATION

Instead of relying on trend reports and market analysis alone to inform designs for next season's collection, both mass-market fashion retailers and luxury brands' creative directors can use generative AI to analyze in real time various types of unstructured data. Generative AI can, for example, quickly aggregate and perform emotion analysis from videos on social media or model trends from multiple sources of consumer data.

Creative directors and their teams could input sketches and desired details—such as fabrics, color palettes, and patterns into a platform powered by generative AI that automatically creates



an array of designs, thus allowing designers to play with an enormous variety of styles and looks. A team might then design new items based on these outputs, putting a fashion house's signature touch on each of the looks. This opens the door to creating innovative, limited-edition product drops

that may also be collaborations between two brands. Products such as eyeglasses could be designed for individuals by using facial-recognition technology powered by generative AI to scan facial topography and adjust for a customer's size and style preferences.

The power of AI to spark new ideas, try myriad design variations without having to produce expensive samples, and vastly accelerate their processes.

# IMPROVED PRODUCTION

AI has various applications in fashion production, including capable quality assurance and predictive maintenance of equipment which reduces the downtime of the machines and ensures functioning continuity.

# FUTURE TRENDS OF AI IN FASHION

The use of AI in the fashion industry is expected to continue growing. Here are some of the explanation that we can expect to see:

- 1. Sustainability:** AI will be used to make the fashion more sustainable. By optimizing the supply chain, reducing waste and improving efficiency, fashion companies can reduce their environmental impact and create a more sustainable industry.
- 2. Influencer marketing:** AI will be used more extensively in influencer marketing campaigns. By analyzing data on social media, AI can help fashion companies to identify the most influential bloggers and social media personalities to work with.
- 3. Predictive trend analysis:** AI and machine learning are used to analyze data from sources like social media, runways, and street style to predict fashion trends exactly. This





trend is expected to continue, helping brands stay ahead of fashion trends and design clothing that is in requirement phase.

#### 4. **AI-Generated fashion design:**

Designers can harness AI to create novel designs by feeding it images of different fashion items. AI can combine these designs in unique ways to create entirely new fashion concepts. This trend may lead to novel and unexpected fashion designs.

#### 5. **Personalized fashion advice:**

AI-driven chatbots now provide customers with tailored fashion guidance, taking into account their body type, style preferences, and earlier purchases. This trend is likely to grow, providing customer with a 24/7 personal stylist experience.

It's important to note that while these trends represent the possible future of AI in fashion, the industry's adoption of these technologies may be different. Ethical and privacy concerns will also need to be addressed as AI continues to play a big role in the fashion world

Artificial intelligence and ethics in the fashion industry Renda sargues that artificial intelligence can be characterized by four variables that can coexist: Disruptive, as it is setting newmodels of business, interactions and socialrelationships, having the potential to enhance productivity, sustainability and growth in ways never seen before; Empowering, since it can offerhumans tools to enhance their intelligenceand capabilities, as well as bettering their quality of life, health and life expectancy, education and information access.



# CONCLUSION

The role of AI in fashion is set to increase further, driving more personalized, sustainable, and efficient fashion environments. The ability of AI to collaborate with human creativity opens up new horizons for personalized fashion, where AI-generated designs meet individual consumer desires, creating a more inclusive and diverse fashion landscape. With AI-powered solutions, fashion businesses can make data-driven decisions, reduce waste, increase personalization and stay at the forefront of trends. The future of fashion is undoubtedly linked to the possibilities offered by AI, making it an essential tool for the continued success of the industry.

