

Exploring Fashion Trends in Metaverse

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ABSTARCT

Metaverse fashion refers to the intersection of fashion and virtual reality within the metaverse, a collective virtual shared space that encompasses virtual worlds, augmented reality, and the internet. Metaverse fashion encompasses the creation, customization, and consumption of digital clothing, accessories, and styles within virtual environments. This article delves into the burgeoning realm of fashion trends within the Metaverse. Additionally, it reviews the role of technology, collaboration, and inclusivity in shaping the future of metaverse fashion, highlighting opportunities and challenges for creators, consumers, and stakeholders in the digital fashion ecosystem.

Keywords: Metaverse fashion, Virtual fashion show, Avatars, NFT, Virtual influencers

1.INTRODUCTION

The metaverse is a concept that describes a collective virtual shared space, created by the convergence of virtually enhanced physical reality and persistent virtual reality. It encompasses all virtual worlds, augmented reality, and the internet, allowing people to interact with a computer-generated environment and other users. The term "metaverse" was coined by science fiction author Neal Stephenson in his 1992 novel "Snow Crash," where it referred to a collective virtual shared space. In the digital age, the concept of fashion goes beyond the physical boundaries, expanding its realm into the virtual landscape of the metaverse. As technology continues to evolve, fashion industry is manifesting through avatars and digital personas within immersive virtual environments. The metaverse, a collective virtual shared space, represents not only a technological innovation but also a playground for creativity and self-expression in the realm of fashion.

From virtual storefronts to digital fashion shows, businesses are rapidly adapting to this new landscape to stay relevant and competitive in the ever-evolving market. By establishing a presence in virtual worlds, fashion brands can connect with consumers from diverse geographical locations, transcending physical boundaries and opening up new avenues for growth. Global Fashion Metaverse market was valued at US \$ 7.1 billion in 2023 and is expected to reach US \$ 89.6 billion by 2032 growing at a CAGR of 32.54% during the forecast period 2024 – 2032.

2. WHAT IS METAVERSE FASHION

Metaverse Fashion describes the use of digital technologies in the fashion industry, such as computer-aided design, 3D software such as Blender, augmented reality, and virtual reality in an immersive experience, instead of relying on traditional textiles to create and market physical fashion products. Metaverse fashion is designed for humans and their avatars. Metaverse fashion has been a growing part of the gaming industry and recently has expanded to include metaverse fashion shows, digital-only brands, and non-fungible tokens (NFTs).

Metaverse fashion encompasses the creation, customization, and consumption of digital clothing, accessories, and styles within virtual environments. With metaverse experiences becoming an increasingly popular opportunity, digital avatars and digital-only fashion brands are expanding, giving rise to exciting new possibilities in the world of fashion.

Facebook is rebranded to Meta, expanding its focus beyond social media to encompass building the metaverse. It has Horizon Worlds as A virtual worlds platform, Horizon Venues as an events platform and Horizon Workrooms as virtual office. These platforms are interconnected and allow users to create avatars representing them as they explore and interact with others. Facebook's metaverse is just one part of a much larger metaverse. Currently, the metaverse is not the one interconnected space. It is made up of many individual worlds and owned by many different entities. For example, Minecraft's world exists separately from Fortnite's world. However, they are both considered a part of the metaverse. Each one has its own avatars, currency, rules, and access points.

3. FASHION TRENDS IN METAVERSE

The fashion and apparel industry are intricately connected to the metaverse in several ways, reflecting the evolving landscape of digital culture, consumer behaviour, and technological innovation.

A. Virtual Fashion Shows and Events:

Fashion brands and designers are increasingly utilizing the metaverse to host virtual fashion shows, exhibitions, and events. From the first-ever Metaverse Fashion Week to individual exhibitions and shows hosted by brands, digital fashion shows in the metaverse empower brands with a unique opportunity to showcase new styles to consumers. These immersive experiences allow audiences to engage with collections, interact with digital avatars of models, and explore virtual environments created to showcase the brand's aesthetic and narrative. By surpassing physical limitations such as location and capacity, virtual fashion events democratize access to high fashion and foster global engagement.

Virtual fashion has taken centre stage with the Metaverse Fashion Week (MVFW) which is a four-day virtual event which was hosted in Decentraland. Decentraland labels itself as a browser based virtual platform and it is a fully realised 3D virtual space.



FIG 1: Decentraland Virtual fashion week

Decentraland has created a number of devoted digital spaces, accessible to all, whereby visitors can participate not just in runway shows but panel talks, shopping experiences, even ‘after-parties’. The British department store Selfridges, a pioneer of the fashion-meets-crypto field is the first major retailer to announce plans to sell NFTs in store, in collaboration with Paco Rabanne and the estate of Victor Vasarely In Metaverse Fashion Week, Selfridges created a new digital space, reminiscent of the futuristic curves of its Birmingham store, to house these NFTs, the gallery-like interior allowing avatars to take a ‘winding guided tour’ and ‘celebrate and immortalise works of art from the past’.

A number of fashion shows took place across the schedule. Etro hosted a fashion show titled ‘Liquid Paisley’, focusing on the house’s heritage paisley print. Dolce & Gabbana showed a collection with NFTs of the looks available after the show, and Tommy Hilfiger, Roberto Cavalli and Perry Ellis hosted their own runway events.

Giuseppe Zanotti allowed users to purchase NFTs of its ‘Cobra’ sneakers, which avatars can then wear in a limited edition of 1,000. Hogan hosted on Hogan-X, an ‘after-party’ featuring special digital activations, including a selection of NFTs by creative studio Braw Haus, featuring various international artists (each will celebrate the brand’s ‘Untraditional’ sneaker) and ‘metaverse-ready fashion house’ Republique collaborated with French accessory retailer Monnier Paris on a special store of ‘wearable’ outfits from brands including Coach, Ester Manas and Wandler. A performance by musical artist Grimes, in collaboration with Auroboros, featured as part of the fashion week schedule, as will films by Chanel and Lanvin, showing in a digital movie theatre.



Fig 2: Scene in Virtual fashion show

A report from DressX estimated that the carbon footprint of creating one digital garment is an average of 97% less than that of a physical item. For sustainability-minded consumers, digital fashion provides the opportunity to explore designs in a more environmentally friendly way

B. Digital Fashion and Avatar Customization:

An avatar in a virtual world is a three-dimensional character which represents a real person in the virtual world. Most of the time, avatars are customizable, and they can be more or less similar to the real people who control them. Within virtual environments and gaming platforms, users can customize their avatars with digital clothing and accessories. This presents a new frontier for fashion brands to extend their reach and visibility by offering virtual versions of their products for purchase or as promotional items. Digital fashion items can be sold as standalone products or as part of in-game purchases, creating additional revenue streams for brands and enriching the user experience.

Avatars in the metaverse serve as digital representations of users, allowing them to navigate and interact within virtual environments. These avatars play a crucial role in shaping users' experiences and interactions, offering a means of self-expression and identity exploration. Users can customize their avatars according to their preferences, choosing features such as appearance, clothing, accessories, and even animations. This customization allows individuals to express their unique personalities and style within the virtual world.

In addition to personal use, avatars also serve as a means of brand representation within the metaverse. Businesses and organizations create branded avatars to represent their presence in virtual environments, engaging with customers and promoting their products or services in a visually appealing manner. Avatars can enhance accessibility within the metaverse by providing customizable options that cater to users with diverse needs and preferences. Features such as adjustable sizes, accessibility-friendly clothing options, and representation options for various identities ensure that all users can participate fully in virtual experiences.

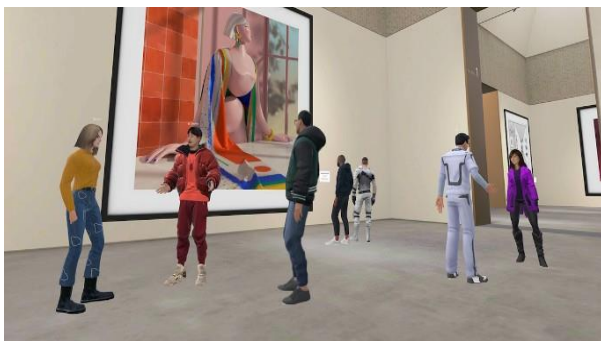
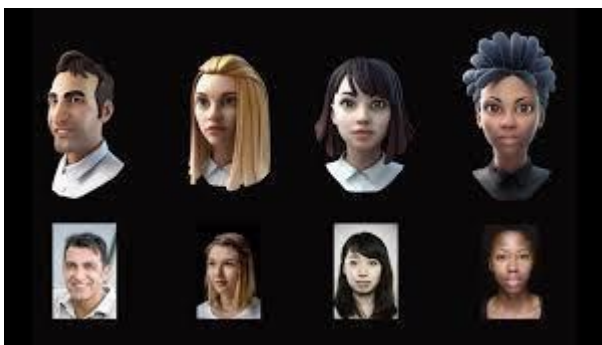


Fig3:Avatars in metaverse

Avatars often serve as the vessels through which virtual goods, such as clothing, accessories, and digital assets, are showcased and utilized within the metaverse. Users can purchase, collect, and trade virtual items to personalize and enhance their avatar's appearance and functionality.



Fig 4 : Avatars used by Nike

In 2021, Nike acquired RTFKT, a company that creates virtual sneakers and digital artifacts, to accelerate its digital transformation in the metaverse. Sneaker enthusiasts can try on the new pieces from the Nike range, but they cannot be worn in real life. Established in 2020, RTFKT was co-founded by Benoit Pagotto, Chris Le and Steven Vasilev and is dedicated to blurring the lines between sports, gaming and sportswear. In early 2021, RTFKT teamed up with “Fewocious”, a popular crypto artist, and sold around 600 pairs of shoes, fetching a whopping USD 3.1 million in under seven minutes. RTFKT launched a virtual “try on” session of the sneakers on Snapchat, after which bidders could enter the digital auction.



Fig 5; Virtual shoes

Acquiring the metaverse fashion brand RTFKT has allowed the company to launch collections of virtual sneakers and apparel using technology such as blockchain, AR and NFC and is working towards building a strong base within the Metaverse Fashion space. In the six months following the RTFKT acquisition, Nike made over \$150 million from metaverse fashion and avatar sales.

Gucci, an Italian fashion and leather goods brand, is now hosting its own metaverse experience in The Sandbox. The fashion house is the first major luxury brand to build a digital world in the metaverse platform. Gucci’s experience will feature “Gucci Vault Land,” an experimental space where users will go on a journey through the fashion brand’s history through games and NFTs.

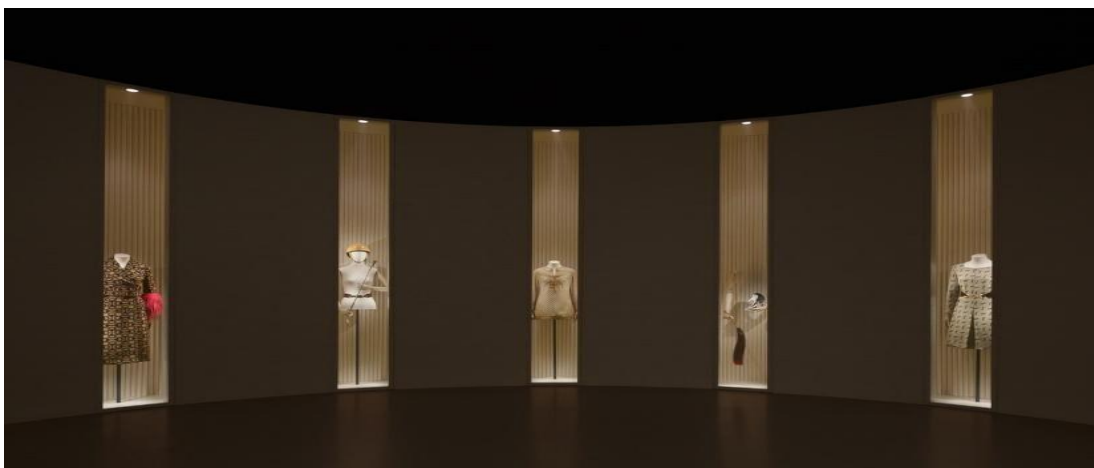


Fig 6: Display in meta verse

It is predicted that digital fashion could increase the industry’s sales by \$50 billion by theyear 2030.

C. Collaborations and Brand Partnerships:

Fashion brands are collaborating with virtual worlds, gaming platforms, and digital artists to create unique experiences and products that bridge the gap between physical and digital realms. These collaborations range from virtual clothing lines inspired by popular games to immersive brand activations within virtual environments. By aligning with the interests and aesthetics of virtual communities, fashion brands can tap into new markets and engage with audiences in innovative ways.

Fashion brands are creating virtual products for sale in metaverse environments such as gaming platform Roblox. In May 2021, Gucci and Roblox collaborated to create a virtual Gucci Garden, where Gucci sold virtual goods via Roblox currency (Robux). Gucci limited edition bags sold for the equivalent of \$4,115.

Meanwhile, gaming platform Minecraft has collaborated with brands such as Disney to offer virtual experiences available for a fee to Minecraft players. Tommy Hilfger has recognized the emergence of virtual spaces inside popular gaming platforms. The brand partnered with Nintendo's Animal Crossing New Horizons in 2020. Also, the brand has introduced virtual clothing inside Roblox, a metaverse-type game. Dior is a luxury fashion retailer popular for its clothing, cosmetics, and jewellery. Dior has ventured into the Metaverse and partnered with Ready Player Me, an avatar platform, to create digital avatars. These digital avatars allowed owners to purchase Dior Fragrances.

D. Augmented Reality (AR) Try-On Experiences:

AR technology enables consumers to virtually try on clothing and accessories using their smartphones or wearable devices. By overlaying virtual garments onto the user's live video feed or uploaded images, AR technology allows consumers to try on different styles, sizes, and colors without physically trying them on. This feature enhances the online shopping experience by providing a more accurate representation of fit and style, ultimately reducing returns and increasing customer satisfaction. This technology not only enhances the online shopping experience by providing personalized recommendations and visualizations but also reduces the need for physical retail spaces and inventory.

AR technology enables fashion brands to create interactive 3D models of their products that users can view and interact with in the virtual environment. By scanning QR codes or using AR-enabled mobile apps, consumers can access additional product information, view product details from different angles, and even customize certain features such as color or pattern.

Fashion brands use AR technology to create immersive advertising and marketing campaigns that engage consumers in the metaverse. AR-powered filters, lenses, and effects allow brands to create interactive experiences that users can engage with on social media platforms or branded mobile apps. For example, users can try on virtual sunglasses, experiment with makeup looks, or participate in virtual try-on challenges, driving brand awareness and user engagement.

AR technology is integrated into social shopping platforms within the metaverse, allowing users to discover and purchase fashion products directly within their social media feeds or virtual environments. AR-enabled features such as shoppable posts, AR try-on experiences,

and virtual fitting rooms enable seamless shopping experiences that bridge the gap between social interaction and commerce, driving conversions and sales for fashion brands.

E.NFTs and Digital Collectibles:

Non-fungible tokens (NFTs) have emerged as a novel way to authenticate and trade digital assets, including digital art, collectibles, and virtual fashion items. Fashion brands are exploring the potential of NFTs to create limited-edition digital fashion collections, virtual accessories, and exclusive experiences for collectors and enthusiasts. These digital garments and accessories can be worn by users' avatars within virtual worlds, allowing them to express their individuality and style in the metaverse. Digital fashion NFTs are often limited edition, making them highly desirable among collectors and enthusiasts.

Fashion brands are collaborating with digital artists, designers, and creators to release NFT collections and collaborations within the metaverse. These collaborations result in unique digital fashion items and artworks that are tokenized as NFTs, allowing fans and collectors to own and trade them as digital assets. NFTs provide a secure and transparent way to verify ownership and authenticity of digital fashion items within the metaverse. Each NFT is associated with a unique cryptographic token that serves as a digital certificate of authenticity, ensuring that the item is genuine and officially issued by the fashion brand. This gives users confidence when purchasing and trading digital fashion NFTs, enhancing trust and credibility within the metaverse ecosystem.

Fashion brands are using NFTs as a means to engage their community and reward loyal customers within the metaverse. Brands may distribute NFTs as part of promotional campaigns, loyalty programs, or special events, allowing users to collect and redeem them for exclusive rewards, discounts, or virtual experiences. NFTs incentivize user participation and interaction, fostering a sense of belonging and loyalty within the fashion brand's metaverse community. A recent report indicated that leading brands such as Nike, Dolce & Gabbana, and Tiffany have generated \$232 million in non-fungible token (NFT) revenue

- Gucci collaborated with digital sneaker artist @guccigang.eth to release a limited edition collection of virtual sneakers as NFTs, allowing users to own and trade exclusive digital footwear within the metaverse.
- Nike launched an NFT collection called "CryptoKicks," featuring virtual sneakers as NFTs, allowing users to collect and trade digital versions of Nike's most popular shoe designs within blockchain-based games and virtual worlds.
- Burberry launched an NFT collection featuring digital versions of its iconic trench coats, allowing users to purchase and customize virtual outerwear for their avatars in virtual worlds like Decentraland and The Sandbox.
- Louis Vuitton partnered with digital artist Beeple to release a series of NFT artworks inspired by the brand's iconic designs, including virtual handbags, luggage, and accessories, available for purchase on the blockchain.
- Prada collaborated with digital fashion platform DressX to release an NFT collection of virtual garments, allowing users to try on and style digital versions of Prada's latest collections within virtual environments.

- Off-White released an NFT collection featuring digital artwork and virtual fashion items designed by founder Virgil Abloh, allowing users to purchase and own exclusive digital assets within the metaverse.
- Versace partnered with digital fashion marketplace OpenSea to launch an NFT collection of virtual clothing and accessories, allowing users to buy, sell, and trade digital versions of Versace's luxury fashion items.
- Dior collaborated with digital artist Kenny Scharf to release an NFT collection featuring virtual versions of Dior's iconic handbags and accessories, available for purchase as limited edition NFTs on blockchain platforms.
- Balenciaga launched an NFT collection called "Afterworld: The Age of Tomorrow," featuring virtual clothing and accessories inspired by the brand's futuristic aesthetic, available for purchase and customization within a virtual gaming experience.
- Fendi collaborated with digital artist Sarah Bahbah to release an NFT collection featuring virtual fashion illustrations and artwork inspired by Fendi's signature designs, available for purchase and ownership on blockchain platforms like Rarible and Foundation.

F.Virtual Influencers and Brand Ambassadors:

The metaverse is home to a growing community of virtual influencers and brand ambassadors who collaborate with fashion brands to promote products and engage with audiences. These digital personalities, often created using advanced CGI technology, have large followings on social media platforms and virtual worlds, making them influential voices in the digital landscape. By partnering with virtual influencers, fashion brands can reach new demographics and build authentic connections with consumers in the metaverse.

- Lil Miquela is one of the most well-known virtual influencers, created by the startup Brud. She has collaborated with numerous fashion brands, including Prada, Calvin Klein, and Balenciaga, to promote their products and campaigns to her millions of followers on social media platforms like Instagram and TikTok.

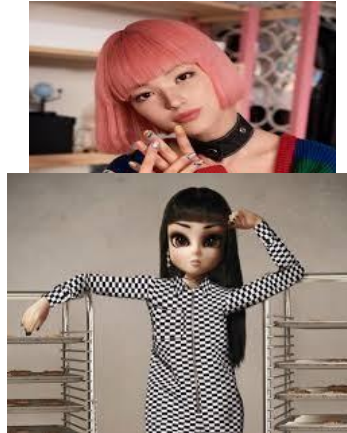


Fig 7: Lil Miquela

- Imma Gram is a virtual influencer created by Tokyo-based company ModelingCafe. She has partnered with fashion brands like Louis Vuitton, Burberry, and Coach to

showcase their latest collections and create engaging content for her followers in the metaverse.

Fig 8: Imma Gram



□ Noonouri is a virtual fashion influencer and digital model created by graphic designer Joerg Zuber. She has collaborated with luxury fashion brands such as Dior, Versace, and Valentino to promote their products through creative and visually stunning digital campaigns.

Fig 9: Noonouri

□ Shudu Gram is a virtual model created by British photographer Cameron-James Wilson. She has worked with fashion brands like Fenty Beauty, Ellesse, and Tiffany & Co. to promote their products and campaigns, blurring the lines between reality and digital art in the fashion industry.

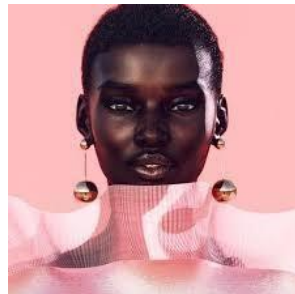


Fig 10: Shudu Gram

□ Maya is a creation of sportswear giant Puma, introduced in 2020 as a self-proclaimed fashion model. Her Instagram bio proudly declares her as “Your average not-so-average Southeast Asian Virtual Girl,” reflecting her unique identity. Maya made waves in the fashion industry by unveiling the Puma Rider shoe, leaving an indelible mark in the world of virtual fashion.



Fig 11: Maya

4.CONCLUSION:

Metaverse fashion represents a fusion of digital technology, creativity, and self-expression within virtual environments. Through digital avatars, virtual fashion shows, AR try-on experiences, NFTs, and collaborations with virtual influencers, metaverse fashion is redefining the way we interact with clothing and style in the digital age. The metaverse enables users to express their creativity and individuality through fashion, as well as share it with others. The metaverse also enables users to monetize their creations, either by selling them directly to other users or by collaborating with brands. The fashion and apparel industry is embracing the opportunities presented by the metaverse to innovate, engage with consumers, and expand their reach beyond physical boundaries. Metaverse fashion provides a great opportunity and is still in its infancy compared to its future market potential.

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