The Drawbacks and Problems with the Metaverse Mindset

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Abstract: An exact definition for the Metaverse is yet to emerge. Still, it can broadly be classified as the next generation of the Internet- collective, persistent, virtual worlds in which our physical and digital experiences intersect. (Kompella, 2022). The Metaverse will mix many existing yet-to-be-invented technologies and approaches to give us rich, dynamic, and immersive ways to work together, play, educate, socialize, and communicate. Blockchain, gaming, augmented reality, virtual reality, and artificial intelligence are just a few fields from which the Metaverse will draw. Many metaverse aspects already exist (and have for some time), but not to the extent or degree its adherents envisioned. Three letters quickly make their way into the digital world- NFT. NFTs are the newest way to own the rarest and exclusive items, whether artwork, games, fashion, or utility-based. However, here is the catch- In a world where everything is at our fingertips, what happens when what one owns cannot be touched? Fashion, design, and luxury firms invest a lot of effort and money in securing their intellectual property. Still, as more Web3-focused businesses become willing to work with customers and clients, the lines separating creative ownership are quickly blurring. The problematic and disruptive nature of the Metaverse does not end here. Security issues; Social, psychological, and physiological limitations; disruption of the flow of the natural design process; adverse effects of the Metaverse on the environment are some of the many drawbacks one can think of here. This study will seek to dive deep into these drawbacks and draw conclusions based on whether or not the Metaverse is the inevitable future of fashion as claimed by brands on the forefront.

Keywords: Virtual, NFTs, fashion, creation, challenges, brands.

1. Introduction

The virtual boundaries of cyberspace we (a collective phrase for internet and technology users) have gotten familiar with are expanding rapidly. The most recent of these is an offline/online interface of a virtual world known as the Metaverse, in which information exchange has greater importance than financial exchange.

It is a virtual world where offline consumption of goods, services, and experiences is replicated by online navigation of the equivalent virtual interfaces required for unlocking, accessing, and paying for the same exchanges (Roh, 2021) (Merwe, 2021).

One can be anybody one wants in the enormous and magnificent Metaverse cosmos. Because the projection of events in the Metaverse would be extraordinarily tremendous and everlasting, its immersive experiences relating to fashion & style are also something people are looking out for here.

Industrial 4 brought some significant advancements and opportunities over the past ten years. Through digital transformation and the development of new technology infrastructures like Web 3.0, numerous sectors have experienced a significant paradigm change. Virtual goods, particularly in the fashion industry, define new business models as a result of Web 3.0, giving meaning to digital ownership.

Through native digital products, digital fashion firms created unique digital ecosystems. As technology is constantly growing and adopting an agile approach amid rapid change, there are various points of view and infrastructure gaps on how these goods can play a sustainable role in the digital ecosystems apart from the hype surrounding the digital marketplaces.

Definitions:
Metaverse:

The term "metaverse" is made from the combination of two words- "verse" and "meta." The Metaverse is a vast, shared virtual environment produced by the fusion of physically persistent virtual space and virtually augmented physical reality, including the total of all virtual worlds, augmented reality, and the Internet. The term "metaverse" was first used by fiction writer Neal Stephenson in his 1992 novel "Snow Crash." A widespread metaverse is a virtual environment that users of augmented reality devices can access. The lifelike virtual environment is a Virtual world where digital avatars represent humans. The virtual world constantly expands and changes based on their social decisions and acts. Through augmented and mixed reality, people can access the Metaverse virtually in its whole or only certain portions in their physical space. The Metaverse can link a virtual digital environment to the real world. In October 2021, Mark Zuckerberg declared that Facebook would change its name to Meta and spend heavily on the Metaverse.

The Metaverse Mindset:

It provides fashion firms with tantalizing new revenue options and a means of reaching out to tech-savvy Gen Zers and other demanding young consumers. Thus, the introduction of the "Metaverse Mindset." A growing number of companies

have made this new perspective known by opening virtual stores, games, and online events over the past year. Given the increasing importance of in-app social commerce, these attempts appear to be picking up speed.

Components of Metaverse:

To fully understand the metaverse mindset, we must first make ourselves aware of all the components that make the field of Metaverse a plausible endeavor for the future. It is required to engage seamlessly and concurrently in a presence-based environment to service the Metaverse similarly to how the actual world is serviced. Economic activity based on these exchanges between users must continue to maintain a sustainable Metaverse. Hence, we need to break down and understand the Metaverse into its hardware, software, and contents from the perspective of each component.

A. Hardware Components

A necessary piece of Metaverse hardware is an HMD (Head-Mounted Displays) that blocks the vision to enable immersive involvement. Birnie et al. (L. Birnie, 2021) suggested a fovea rendering method that keeps the center portion in high resolution, akin to human eyesight, for a more compelling visual experience. The resolution, field of view, and latency are crucial for physical devices and sensors. The most critical of these is latency, which is essential to multimodal interactions and should be developed with the risk of adverse effects and temporal gaps in mind.

1) Hand-based input devices

Numerous circular coordination and input areas have been proposed for hand-based input devices (Z. Li, J. Chan, J. Walton, H. Benko, D. Wigdor, and M. Glueck, 2021). Extensive user data modeling (e.g., mobile phone grip prediction) is required to provide a feeling of the tactile material.

2) Non-hand-based input device

They are ancillary inputs: eye-tracking, head- tracking, voice input devices, and more. (C. R. Foy, et al., May, 2021)

3) Motion-based input device

Body tracking and treadmills are used to accurately give motion information with auxiliary devices so that the physical sense of space or gravity can be employed successfully. Passive and active methods are also used to categorize motion input devices.

B. Software Components

(For Recognition, Generation, Synthesis of Scene, Sound /Speech Along with Visual and Motion Rendering)

A cognitive illusion is crucial for users to fully experience the subjective induced reality they share and the objective reality of the physical place.

Detection and recognition distortions are crucially unrequired, especially in Metaverse. Modifying the expression, altering the kernel, and boosting input are all techniques for reducing distortion. Faces, body-related stances, gestures, and gazes are objects of object recognition. This object detection method involves detecting, recording, identifying, and tracking. (Sang-Min Park and Young-Gab Kim, January 4, 2022)] The core element of the Metaverse- Content is utilized to create

immersive experiences through thoughtfully plotted storylines and user-generated events.

The paradigm shift approach and the method of reusing existing material are the two ways to produce content. Scenes, color and lighting, music, sampling and aliasing, environmental navigation, and real-world content are the areas that call for ecological design. User movements, characters, and avatar personas influence behavioral modeling. To create and examine VR material, Wang et al. [(M. Wang, March, 2020)] developed research to process panoramic pictures and movies in virtual 3D settings using CNNs (Convolutional Neural networks) and GANs (Generative Adversarial Networks). More natural statements and imagery are produced than previously.

The avatar is an essential entity in the Metaverse, and the avatar is created, and the action is imitated using animation. Vision-based models estimate human poses, recognize hand gestures and predict gaze. The iris, facial contour, and 3D gaze prediction indicate the look [(SANG-MIN PARK AND YOUNG-GAB KIM, January 4, 2022)]

Concepts of Metaverse:

To fully understand the Metaverse Mindset and its implication in the design field and Fashion Industry, one must be familiar with standard concepts that surround the application of Metaverse. These terms shall be used recurrently in the upcoming digital age and hence, is necessary for one's full knowledge of the Metaverse.

Extended Reality (XR): In terms of technology, XR is realized via the use of VR (virtual reality), MR (mixed reality), and AR (augmented reality).

Augmented Reality (AR): AR overlaps virtual objects on a real space from a first- person perspective (e.g., Pokémon Go).

AR uses computer-generated images, sounds, 3D models, videos, graphics, animated sequences, games, and GPS information and superimposes it in real-world environments. AR devices have the advantage of conceptualizing controllable devices without an additional screen. (Sang-Min Park and Young-Gab Kim, January 4, 2022)

Virtual Reality (VR): VR acts as an avatar in a digitally orchestrated 3-D world. VR stimulates an experience as if one were in a specific place without physical constraints, helping one churn out ideas that he gets from experiencing different places. [(Sang-Min Park and Young-Gab Kim, January 4, 2022)]

Mixed Reality (MR): The amalgamation of VR and AR simulations creates a hybrid reality.

Avatar: An avatar fulfills the social role of a job and persona in the Metaverse.

Digital Twin vs. Digital Me: Avatar, the inhabitant of the Metaverse, has an interchangeable relation to the "Digital Twin" and the digital Me of the virtual world. A Digital twin is a virtual model for predicting behavior. Digital twins are used to creating real- life objects like agents in the augmented world and expect results in advance through simulations of scenarios and interactions that might occur in real life. [(Sang-Min Park and Young-Gab Kim, January 4, 2022)]

Digital Me is an embodiment of ego in virtuality, unlike the actual self. In concept, the digital twin is different in how it

objectively interprets the authentic self, whereas the digital Me interprets the self subjectively. In terms of application, digital twins solve current problems and simulate future outcomes. Digital Me, on the other hand, is a substitute for self that projects in ways that cannot be done in real life. [(Sang-Min Park and Young- Gab Kim, January 4, 2022)]

Blockchain: Data storage is accomplished using a blockchain—blocks connected to the block before they are used to store data. One other characteristic of blockchains makes they are safe. Blockchains are not kept on a single machine. Instead, it is kept in a peer-to-peer network, a sizable collection of computers.

NFTs: Non-Fungible Tokens. NFTs are different from classic digital assets such as Bitcoin; they are unique and cannot be equally exchanged with one another. Moreover, NFTs break the fungibility of traditional cryptocurrencies and make applicable digital assets for ecosystems (Gavin Wood, 2014; Wang et al., 2021).

WEB 2.0 & 3.0: "The Internet as it is today, with all of the blogs, social media platforms, online stores, news websites, and more, are represented by Web 2.0."

Its defining characteristics are user-generated content, service interoperability, usability, interactiveness, and high levels of involvement. Although this may appear to be a significant improvement over the static pages of web 1.0, there have been very few modifications to the fundamental concept. Web 3.0 represents a significant advancement over web 2.0 since the architecture and backend are changing. This phase of the Internet, sometimes called the Semantic Web, employs a sophisticated metadata system that organizes and organizes all types of data in a way that makes it usable for computers and people.

Fig. 1. Differences between the two
Source: https://academy.affinidi.com/web-2-0-vs-web-3-0-a-bridge-between-the- past-and-the-future-c99668c1e2f0

Digital Fashion:
"As consumers spend time more online and the hype around the Metaverse continues to cascade into virtual goods, fashion leaders will unlock new ways of engaging with high- value younger cohorts. To capture untapped value streams, players should explore the potential of non-fungible tokens, gaming, and virtual fashion — all of which offer new routes to creativity, community-building, and commerce. Burberry's limited-edition NFT, Sharky B. Burberry." (IMRAN AMED, Dec 2, 2021)

Fashion designers can now create digital-only collections independent of digital prototyping and sampling thanks to 3D technology; These procedures are referred to as "digital fashion" by practitioners, consultants, and the fashion industry. "Digital fashion" is becoming more prominent due to its non-physical character, moral principles, and creative possibilities (Särmäkari, 2021). The ongoing COVID-19 epidemic and international economic and political circumstances have only emphasized the importance of swift digital innovation— fashion Condition (2021).

According to the CB Insights (2022) report, new and established fashion brands have been experimenting with new virtual lines, whether for real people or digital avatars.

Although in-game skins are nothing new, luxury brands are increasingly adopting avatar fashion for video games. 2019 saw the introduction of collections for The Sims by Moschino and League of Legends by Louis Vuitton.

For example, Gucci has increased its wagers on virtual fashion by releasing custom outfits for a tennis game, virtual looks for Genies avatars, and sneakers for the location- based smartphone game Aglet.

According to Särmäkari (2021b), "digital fashion" has two interpretations:

1) The first definition refers to employing a digital version as a processual tool throughout the design, development, and selling processes; startups from PVH (Stich and Hatch) would be ideal examples of this aspect of digital fashion, according to Meghan McDowell (2021).

2) A product only worn in virtual worlds, where dressed-up avatars are firmly tied to our natural bodies and identities, is called "digital fashion." Makryniotis (2018). For instance, digital-only garment scans are customized to photographic bodies in AR experiences, and avatars or "digital twins" wear VR experience.

Fig. 2. Fashion metaverse milestones (Source: Vogue Fashion)

2. Objectives of the Research

1) To underline the problems and drawbacks of adopting Metaverse as a virtual lifestyle.
2) To help identify the potential dangers and the negative impact for different strata of brands, consumers & designers.
3) To help educate and spread awareness of the whole concept of Metaverse and help moderate the hold of Metaverse on design and fashion and, in turn, the human mind.

3. Literature Review

In recent times, Virtual Reality has become one of the burgeoning terms of the new decade. For the Metaverse to come close to reality, it has to provide an immersive experience of practical and connected settings supplied via various devices, including smartphones, virtual reality (VR) headsets, and other yet-to-be-imagined form factors.

Attendees of the Metaverse Mindset Training held on Apr 15, 2022, received a metaverse mindset survey. Forty-nine questionnaires were analyzed to understand respondents' perceptions of the Metaverse. Most people familiar with the metaverse mindset concept agree that a third space is necessary for new services in a new economy. The remainder thinks a third space created for dialogue and education is essential. Only one person believes that the intentions above of the Metaverse are already being fulfilled.

The current research conducted by Hemmati (2022) focuses more on the Metaverse as an urban revolution in terms of its impact on urban audience perceptions. The author discovered that whereas the media aims to give the public a deliberate impression of truth, immersive technologies allow the Metaverse to produce more credible visuals than reality.

What consumers want

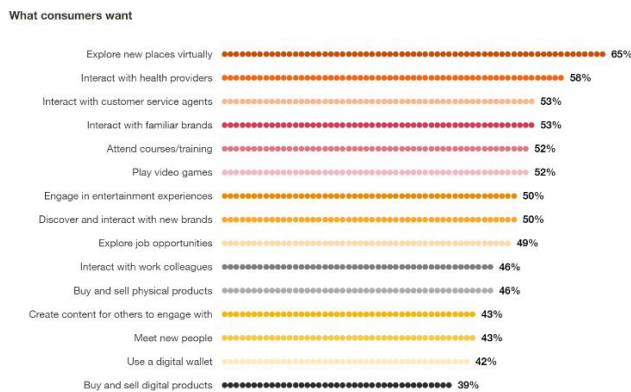|	
Explore new places virtually	65%
Interact with health providers	58%
Interact with customer service agents	53%
Interact with familiar brands	53%
Attend courses/training	52%
Play video games	52%
Engage in entertainment experiences	50%
Discover and interact with new brands	50%
Explore job opportunities	49%
Interact with work colleagues	46%
Buy and sell physical products	46%
Create content for others to engage with	43%
Meet new people	43%
Use a digital wallet	42%
Buy and sell digital products	39%

Fig. 3. Data showing consumers' interest in Metaverse.
Source: A Critical Look at Metaverse Viewpoints, May 24, 2022, Master Thesis

Future efforts should thus concentrate on figuring out how to govern the Metaverse while comprehending democratic, moral, and prosperous Platformization methods and practice using pertinent social institutions and structures, critical fundamental systems in action. One of the crucial problems in this approach includes integrating without weakening cultural aspects like conventions, beliefs, and values, platforms in urban culture and without widening distributional inequalities as wealth and power have advantages and disadvantages. There should be a

respectable academic undertaking in and of itself, as is the scope in which a more excellent knowledge of the mechanics at play will result in noticeable modifications to how things work within the Metaverse. (Simon Elias Bibri, 2022).

Data collection and use are related to "platform accumulation" in terms of neoliberal capitalism's growing forms of privatization, marketization, commodification, and consolidation (Meier and Manze rolle, 2018). In this regard, growing platform infrastructures and their integration with an increasing number of devices in various sectors of urban life enable the collection of behavioral data. With the help of numerous platformization extensions, platform operators like Meta, Google, Apple, and Microsoft can datafication nearly every instance of human social interaction. This procedure is then automated and randomly accessible to many outside actors (Bucher, 2018; Langlois and Elmer, 2013). The effective development of the Metaverse is based on the idea that this strategy will guarantee control over the operations of major tech firms. In this vein, Rosenberg (2022) analyses the regulation of the Metaverse as a roadmap, laying out the threats it poses and suggesting regulatory measures. Through the lens of surveillance capitalism, Bibri and Allam (2022b) examine and criticize the Metaverse, concentrating on how and why the governance practices of urban society are inescapably undemocratic and immoral. (Simon Elias Bibri, 2022).

Most of the data set's sources talk about Metaverse initiatives in which big tech is heavily involved. Mark Zuckerberg invited content producers to use their Metaverse platforms and declared that we would build the Metaverse together. A promise that might not be possible without trade-offs since Roblox levies 30% of every transaction in their ecosystem. Some readers express concern that an oligopoly—a small number of powerful corporations controlling the market—will rule the Metaverse ecology. The free raw material of private human experience is one-sidedly claimed by surveillance capitalism for conversion into behavioral data for profit and control (Zubof, 2019). The Metaverse is a worldwide platform that exemplifies the market-driven process of surveillance capitalism by exchanging user personal information by converting it into behavioral data, depending on widespread Internet surveillance, and closely examining online interactions, conversations, and activities (Bibri and Allam, 2022b). These data are bundled as prediction products about what individuals will do right now, shortly, and in the future, which are offered to political elites and sold to behavioral futures markets. (Simon Elias Bibri, 2022).

According to Kitchin (2020), the usefulness of the Virtual world's solutionist technologies introduced in the COVID era in use has been overstated. This crisis allowed governments to increase the adoption and normalization of surveillance technologies, with no plans to do so after the pandemic. The "new normal" will also involve spatial sorting for who can enter public and private spaces. The monitoring and governing systems set up to battle the COVID-19 epidemic will become a part of the "new normal" and will not be switched off once the crisis is over (Sadowski, 2020; Stanley and Granick, 2020). (Simon Elias Bibri, 2022)

Given the hazards and ethical, social, and political questions

it has brought, it has been suggested that the Metaverse is not for the better. Since this crisis's inception and its numerous effects have been demonstrated, its effects will not pass away soon and will have a lasting influence on urban life and how people choose to live there. Therefore, it is now more important than ever to comprehend these threats and their effects on urban society, particularly concerning technocracy, techno-centricity, personal autonomy, freedom, privacy, cybersecurity, discrimination, and social exclusion. (Simon Elias Bibri, 2022)

Additionally, the Metaverse calls for belated engaging user experience (UX) design, privacy norms of conduct, and regulatory requirements. To make these requirements a reality, we have to keep in mind human life as the core of the Metaverse. Nevertheless, will that be the case? Or will we eventually be controlled by powerful business ideas and propaganda: a robotic community with no personal choices or a rational mind?

As NFTs and intelligent contracts can solve the main problems of digital ownership and privacy issues, they need to be regulated to be more applicable. In other words, one of the main criteria for the development of blockchain technology is the legality of cryptocurrencies and the activities that go with them Steve Hedley (2021). (Changiz, 2021).

NFT is not a panacea for all the problems related to media and digital arts, in any case. First, it is essential to consider whether the massive increase in NFT trade volume truly signifies the return of power to the designers and creators through decentralized technology or if it merely represents another asset bubble that sends out false signals and hurts the resale market by oversupplying art [66]. Aside from the argument over whether this financial ingenuity is helpful to artists [220], people should exercise caution regarding the supposed technical robustness against fraud.

The given machine-generated artwork has as much aesthetic value as one produced by a human artist. If both factors are affirmative, then such an artwork generated with machine aid could be considered creative. However, this framework has several faults. The problem stems from the belief that computer-generated work is not genuinely artistic and that any beauty it may possess is entirely aesthetic. This impression develops because the computer must adhere to human instructions to do anything at its basic level, which lessens the essence of "beauty" and "novelty." To solve this problem, we would have to consider the possibility of computer creation.

These questions described before differ somewhat but significantly because of the different baselines for each response. The latter question wanders into the realm of computers being able to create something new without any human (or artist) instructions, and we still need to find an answer in the metaverse era. For the former question, the baseline of an objective human judge not being able to distinguish may be sufficient.

It is important to remember that the widespread adoption of NFT on digital artworks does not mean unlawful appropriations have ceased. People can still take a snapshot of artwork for personal or even illegal commercial usage without compensating the owner.

NFTs should be viewed as ownership-defining licenses, as was stated before in this section. (LIK-HANG LEE, 26 Nov 2021)

With so many brands becoming proactively involved with the Metaverse and the sudden rise of engagement of people in it during covid without prior awareness or complete understanding of a concept that is physically non-existent, many ethical and objective reservations come to one's mind. To help make people an informed decision on whether to adopt their virtual lives head-on, leading the world to an interesting evolutionary cycle or not to be hurriedly roped into an existence that could be subtly fatal for the human psyche.

"In an unregulated, largely ungoverned wild frontier of virtual expansion, which is held accountable for RL consequences of virtual interactions leaking across the interface." (Merwe, 2021)

Also, as a designer and from a creative point of view, is the Metaverse capable of setting our creative boundaries free, or will it limit them instead? It is a yet-to-be-explored question, however, an important one. If we built avatars that function within the Metaverse platform as part of the system designed to safeguard the rights of those who did the work to research the extent to which the author protection legislation applies in the virtual world.

The Metaverse's avatar persona is built on the platform's motions when artificial intelligence is added. Since the Metaverse figure also graphically represents the user's thoughts and feelings, copyright applies to the artist if the art creation is original. However, if the users' products are incredibly creative, the user will realize it. In other words, the topic of whether a user or a platform has copyright rights has lately come up since it can be challenging to define the boundaries of innovation. Users may assert the rights of characters made by creatively mixing design components even if the platform is a copyright holder for those design elements under the Copyright Act. (Kim Gokmi, 2021)

Because Metaverse presents the prospect of establishing a society that may incorporate real life in a virtual setting, creativity is crucial. It is anticipated that the study's findings will be put to good use in determining the extent of copyright that may be secured for the Metaverse platform and in promoting Metaverse copyright. While users might enjoy complimentary access, corporations could have a much higher "pay to play" barrier. For many investors, cryptocurrency's rapid development makes it exceedingly dangerous, and the metaverse announcement is expected to significantly worsen this chaotic yet lucrative scenario. (Yemenici, 2022)

The Metaverse needs several new technologies, protocols, businesses, inventions, and discoveries to function. These will progressively develop as "pre-metaverse" and "post-metaverse" rather than immediately as they combine and integrate with various goods, services, and capacities through time. Before anything else, a few prerequisites must be met. Infrastructure that does not yet exist is needed for the Metaverse. The infrastructure needed for receiving and distributing files is all that the Internet has since it has not been designed to accommodate this experience. (Yemenici, 2022).

The notion that persona (such as preference or pastime) is an element that enriches the Metaverse is a critical aspect to remember while having talks with NPCs. It is necessary to have a permanent communication system with multiple identities and ideas. It is challenging to keep the user's interest with a specific NPC- a model without several personas. We require NPCs that develop alongside users and may react trustworthily to unforeseen circumstances. It should be feasible to offer a logical response based on the previous exchanges (for example, a discussion from a month ago) with the user's behavior serving lifelong. NPCs can be expanded and used for many living things in addition to humans, animals (such as horses, dogs, and cats), and inanimate objects (e.g., desks and clocks). (HUGES, 2022).

Another limitation of the discussed phenomenon is related to its sustainable nature.

The path leading to the Metaverse is fraught with difficulties. Hardware restrictions are among the major obstacles. An everlasting digital environment that can be experienced in real-time by millions of concurrent users will not yet be supported by global networking and processing capabilities. Even with this amount of networking and computing capacity accessible, difficulties with national electrical systems and the environment would arise from the effort's energy usage. (Yemenici, 2022)

Even if we do not now require Gibson's cybernetic improvements to access the Metaverse's features and worlds, there are still a variety of technological prerequisites that can be viewed as a first barrier. Smartphone and data connectivity are prerequisites for one of the Metaverse's fundamental ideas—immediate mobile accessibility—but other metaverse settings may call for much more. Others require a paid membership, while some only require a simple signup procedure. If the metaverse service in issue is powered by blockchain, a unique digital ID and perhaps a digital wallet will be necessary. "The novelty of the technology underpinning the systems is the first hurdle; establishing an authentic virtual identity to navigate the system is the second. Entertainment, therapeutic, and reward value all play their part in shaping the personae of these consumers. However, the life- changing aspects of value (self-actualization and motivation, for example) can be argued as more important." (Merwe, 2021). An integration of both is still required in the Meta universe.

The problem of over-addiction is also explained in the example of ROBLOX- Upgrading the appearance of a suit costs the user money saved for the rent and can indicate excessive immersion. Metaverse is based on separation from reality but depicts the fact that virtual damage is done to the real world. Finding the avatar's owner in the real world and jumping out the window in anger over defeat are mental problems in the immersive Metaverse. The appearance of falling off a chair and backward is expressed as an example in which the Metaverse inflicts real physical damage.

The creation of falsity should not be experienced while interacting with NPCs and avatars. First, companies doing business in the Metaverse should avoid contributing toward false expectations and beliefs about and of customers. Otherwise, false and unrealistic customer expectations issued by hype-filled marketing communications that overpromise will underdeliver on the platform and may lead to a loss in customer loyalty.

"The interoperable framework for identity and property will, for instance, allow users to be consistent in different metaverse spaces and to move digital assets from one space to another. At the same time, such possibilities will pose additional challenges for brands in ensuring consistent universal and omnichannel customer experiences. (Maja Golf-Papez, 2022)." Other challenges researchers cite the type of mediums selected to simulate said reality. AR employs lightweight devices for brief encounters, whereas VR often requires more expensive, hefty gear. Some methods combine the benefits of AR and VR to flip between AR and VR in a single piece of gear. Even though this technology uses AR and VR in different ways than a single-model device, it is more expensive and cumbersome. On the other hand, holograms are a relatively new technology in the Metaverse, but they show promise. (Merwe, 2021) Through Vault's NFT collections, Gucci attempts to showcase the brand's future ideals; digital twins appear to be one of the most critical elements of the brand's digital world.

Based on NFTGO.io's on-chain statistics, this collection was published on January 31, 2022. It has a $10.12 million market cap and $16.87 million in trading volume approximately two and a half months after its debut. These figures demonstrate that consumers of this company are willing to use their digital goods in a blockchain environment. 500 distinct NFTs are stored in about 357 wallets, demonstrating how these digital assets were dispersed in the best way possible to prevent manipulation and address the NFT market issue. Additionally, every information about this collection is accessible due to a clear smart contract and information, such as ERC-721 contact terms and IPFS storage method. The collection's primary use case is the computerized replica of a ceramic sculpture; preferable to refrain from defining this collection as a collectible since scarcity is not a crucial factor in this situation. The intelligent contract specifies the following file formats png and mp4. It can show that fashion brands will have a massive challenge in defining digital products (Changiz, 2021)

4. Methodology

Data from mixed methodologies offer both qualitative and quantitative information. Data that cannot be quantified, such as comments, views, and observations, is referred to as qualitative data. Data that can be translated into a numerical value, such as numbers, percentages, and averages, is referred to as quantitative data.

A literature survey was conducted to comprehend the idea of the Metaverse and its use in business. Secondary data was gathered from publications like books, papers, websites, theses, and more. These databases: Science Direct, Proquest, and Google Scholarly, were used for the literature review. The databases were searched using the terms "Metaverse," "Virtual World," "Business," and "Applications." For this literature evaluation, more than 20 sources were used. Most were papers from conferences, books, and peer-reviewed journal articles. Seven motifs were picked out from the literature review: 1) The history of the Metaverse, 2) The definition of the Metaverse, 3)

Table 1
Table title

Quantitative*	Primary	Research Method- Survey & Content Analysis To understand the current awareness of the Metaverse among the designers. Since the objective relates to the fashion and design world, primary data on such a sample must be collected in surveys with close-ended questions.
Either	Secondary	Research Method: Literature review & analysis. To examine and compare the existing developments and previous successors of Web3, study why and how they failed, and determine or predict if Metaverse has the samefate.
Either	Secondary	Case Studies: To study the current endeavors and development regarding fashion brands to analyze the mistakes they

The architecture of the Metaverse, 4) The applications of the Metaverse, 5) The advantages of the Metaverse 6) The disadvantages of the Metaverse for creators 7) The future of the Metaverse and its feasibility.

The research methodologies suggested for carrying out the research are given in Table 1.

With the booming development and advancements made in the current decade by the technological world towards the realization of Metaverse, this research aims to extend its scope of study to know, underline and bring to the forefront the drawbacks of a significant, seemingly inevitable global phenomenon. It will limit itself demographically till India. The sample size can range from 55-60 people, as the research methods and technological advancements will allow. The sampling is a non-probability sampling that includes a volunteered sampling method, consisting of individuals from mostly design backgrounds, whether design students or young professionals working in the industry. The research will focus on the recent developments surrounding the Metaverse and the potential problems that future innovations will pose.

- This paper's scope of the study does not extend to the coding and engineering aspects of the Metaverse but rather its direct impact on human minds and creative processes.
- The demographic scope of the paper does not extend beyond Bengaluru city, Karnataka, India.
- Also, individuals from various specializations in design were approached for the survey.

Also, a larger sample size for the objectives mentioned above will not be possible as the research being conducted will be theoretical and analytic aimed at drawing probable outcomes that may or may not be confirmed later. However, they will provide a good insight into the subject and enable further scope of research.

The research will follow a mixed method approach of exploratory style, not focused on finding a conclusion to a problem; instead, it focuses on gathering information about the facts and their sources and investigating the existing knowledge. For the room for improvement in communicating on the metaverse mindset, we can see that most respondents believe there is still much space to improve and create in the Metaverse.

A. Research Instruments

For primary data collection, a set of questions were given out to a target group containing professionals and students of the design field to help define the current level of awareness and interest in the Metaverse in a limited Indian-origin sample group, especially future designers, entrepreneurs, fashion business managers, et.

Prerequisites: Age & gender

Are you aware of the whole concept of Metaverse?

Are you aware of Metaverse's development in the fashion industry?

Do you find Metaverse the inevitable future of fashion?

If yes, please select two reasons why?
a) It has more plus sides than downsides
b) You do not consider the already existing problems with Metaverse will have an adverse negative effect.
c) If there are problems, you believe respective professionals in the field will sort them out.
d) You find that Metaverse is an advantageous evolution and will lead to more outstanding results, and the fashion world needs that.

In a day, how long would you want to explore the Metaverse if it realizes?
a) 6-8 hrs
b) 24x7
c) It depends on the engagement

Do you think the evolution of Metaverse will benefit the industry or your organization directly?

Are you skeptical about the success of Metaverse?

On a scale of 1 to 5, 1 being the most skeptical, how skeptical are you about it?

What are the concerns you have regarding the usage of Metaverse as a fashion marketing platform?
a) Death of creative freedom.
b) It will be very business oriented instead being user-oriented.
c) Brands will fail to establish exclusivity as all clothes will be accessible worldwide.
d) Privacy corruption and the dark web will not let Metaverse stay safe for transactions.
e) Other

Has your organization had any plans regarding entering the Metaverse? If yes, then how do you plan to go about it?
a) Plan an equal amount of collections for online and offline platforms.
b) Focus mainly on online presence and outfits.
c) They are not adopting the Metaverse.
d) Go with the flow.

What restraints do you realize you have in kickstarting your Metaverse collection line?

i.   Not aware of the full potential.
ii.   The costs that have to be incurred for the process are too much.
iii.   I do not think Metaverse will sustain for a very long.
iv.   Your company is not yet tech-savvy and equipped to support it.
v.   It may not be a sustainable approach.
vi.   It is still a concept; you do not think it will become a reality.
vii.   Skeptical about the existing brand items in the Metaverse and their profitability.
viii.   Other

Are you familiar with Web 2.0?

Have you received surveys or participated in any form of first-hand information about Metaverse in Fashion? Or is this the first time you have discussed the topic?

Do you think the Metaverse will lead to more problems than solutions for brands?

Web3 and the Metaverse are prominent subjects; even though money is streaming into metaverse-related businesses, investment in fashion and retail is only early stages.

Understanding the full potential of fashion in the Metaverse is becoming increasingly important as its primary Gen Z target customer spends more time there playing, socializing, and buying. The phrase may be used for digital fashion, social media, augmented reality, virtual storefronts, video games, and non-fungible tokens (NFTs). Implying that many firms were already experimenting with metaverse ideas before the name was widely used Maghan McDowell (2021) (Changiz, 2021).

Hence, inputs from some industry mentors of prevalence will be conducted to determine individual companies' strategies and future ideas regarding Metaverse.

5. Findings and Analysis

Gender
58 responses
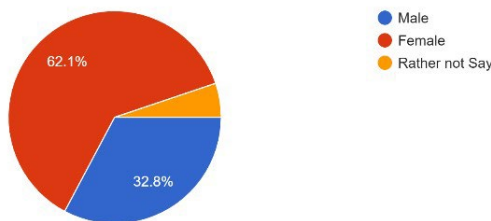
Fig. 4. Responses to Gender of Survey-takers

According to the responses received, 62.1 % of the respondents were Female, and others were Male and more. The age group that the sample size focused on ranged from 18-33 years old. Two of the responses were taken by people between 35-45 years old, not to exclude the experience of the current professionals working in the industry.

The survey does focus more on Gen-Z as it was circulated in an environment easily accessible to college students and young entrepreneurs. These high levels of contact have produced a new generation of digital creatives pushing the limits of online possibilities. Tech- savvy and younger generations spend more time in the areas, ranging from social media and gaming to

virtual worlds. (IMRAN AMED, Dec 2, 2021). 32% of the population falls into the target demographic of the younger generation.
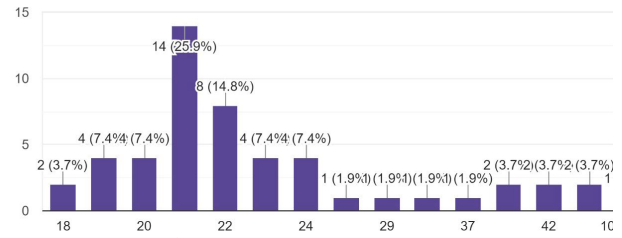
Your Age
54 responses

Fig. 5. Survey Response to Age

Generation Z refers to people aged between 6-24, born between 1997 and 2015 and in 2021. A generation that in the next coming years will constitute almost 30% of the world's population, having 55% of the spending power." (EKHOLM, May 20th, 2021)
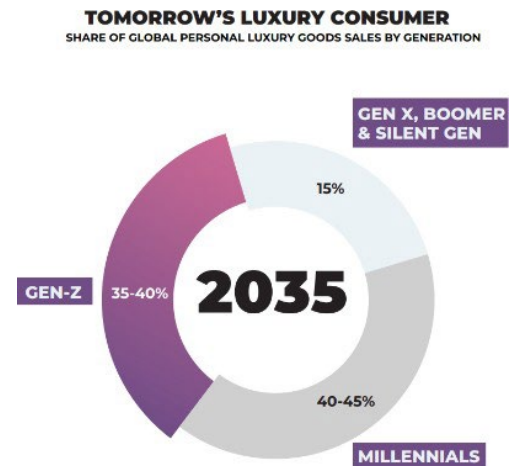

Fig. 6. Graphic of Tomorrow's Luxury Consumer
Source: BoF Insights via Limelight Networks, Newzoo, Statista, Motion Picture Association

When asked whether the respondents were aware of the Metaverse conceptually, 88% said yes. However, this promising finding seems to fade when the questions get deeper into their knowledge about sub-topics discussed earlier in the paper.

Are you aware of the whole concept of Metaverse?
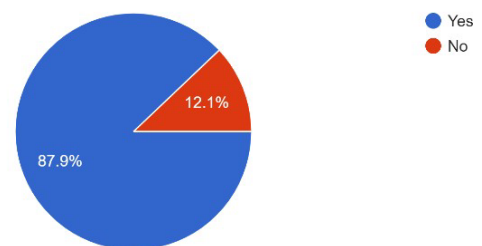58 responses

Fig. 7. Survey Response to Q.1

Table 2

Opinion	Agree that Metaverse is advantageous and believes in its execution.	I have not formed a solidopinion, but open to the idea.	Are on board because it is everywhere.
Percent	52.2%	32.6%	15.2%

The next question shifts the paradigm to a more fashion-relevant discussion causing the most disparity in determining if the concept of Metaverse was as inevitable for the fashion industry as it is credited for or if it is indeed a hype yet to be thoroughly accepted.

Are you aware of Metaverse's development in the fashion industry?
58 responses
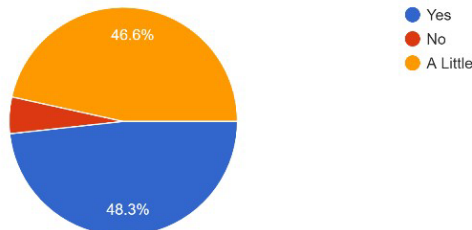
Fig. 8. Survey Response to Q.2

Designers and students alike, when asked if they were fully aware of the Digital Fashion industry's total growth, more than half of the people knew very little or nothing. On the bright side, nearly 48% were aware of the hot topic. When the central question, "Is the Metaverse the inevitable future of fashion?" a consensus of 54% of respondents did not think so.

Do you find Metaverse the inevitable future of fashion?
58 responses
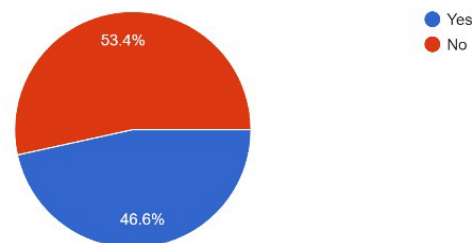
Fig. 9. Survey Responses to Q.3

Thus, further strengthening the validity of scope and the need for further studies to make Metaverse a strong and viable contender as a digital platform for brands and customers to profit from together.

Among the rest of the 46% of responses, below is a content analysis chart that can divide their opinion into four major categories as in table 2.

Before moving on to the possibility of making the virtual era a permanent and sustainable way of living. First is the question of how long and invested the target consumers are willing to dive into the phenomenon.

 Research has shown the potential of bringing similar relationships to the virtual domain through parasocial interaction, which is crucial in developing customer and brand equity (Labrecque, 2014). The existing literature has noted the significance of AI for digital marketing platforms and customer interactions (Dwivedi et al., 2021a). Based on these

observations, it is predicted that consumers in a metaverse would increasingly interact with AI built to learn through frequent customer interaction rather than human firm representatives. (HUGES et al., 2022)

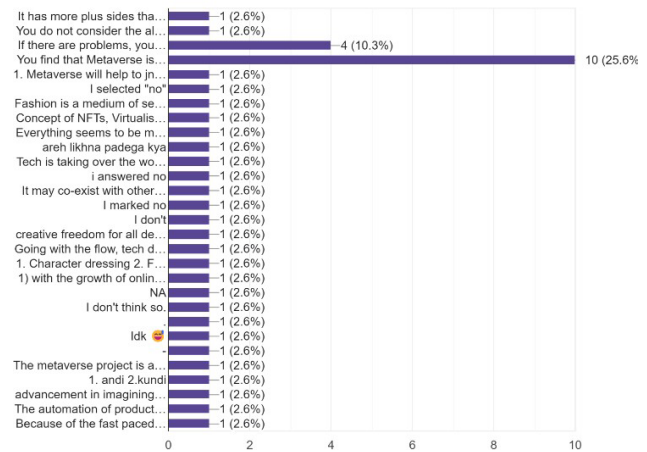If yes, please select 2 reasons why?
39 responses

Fig. 10. Second half response

In a day, how long would you want to spend time exploring the Metaverse, if it realizes.
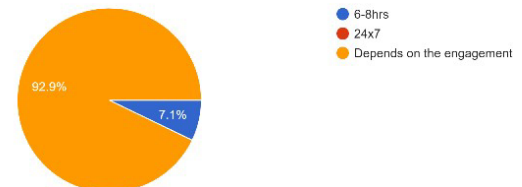56 responses

Fig. 11. Survey responses to Q.4

However, what happens when these interactions may be falsified or intend to give results opposite to reality? Psychologists coined the term "The Proteus effect," named after the Greek God, Proteus, that could shapeshift. It is the tendency for people to be affected by their digital representations, such as avatars, dating site profiles, and social networking personas. Typically, people's behavior shifts following their digital representatives.

If people are clear with this discussion's context and whether or not there is awareness of even if Metaverse is implementable in their field, the next question was posed to the audience. Out of which, 57% of the responses were positive.

Do you think the evolution of Metaverse will benefit the industry or your organization directly?
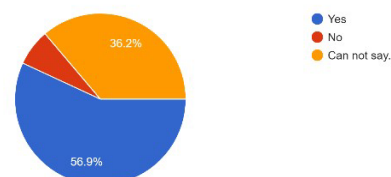58 responses

Fig. 12. Survey responses to Q.5

Table 3
Coding and bifurcation of answers for this question were done to make analysis easier. They are grouping multiple similar statements into the umbrella sentiments they portray

Coding	Creativity	Business	Exclusivity & Fallin Demand	Safety &Privacy	All
Boost	1%	20%	1.7%		
Hinder	8 %		29%	27%	1%
Table. 03					
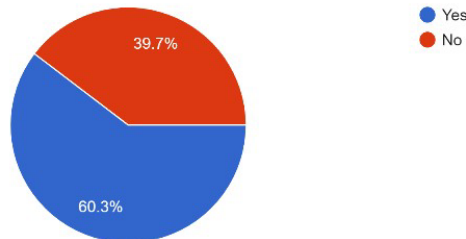
Fig. 13. Survey responses to Q.6

However, faith in this phenomenon's success seemed shaky at best due to the response to the following question.
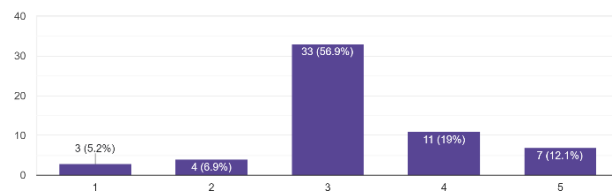
Fig. 14. Survey responses to Q.7

Nevertheless, many participants were unwilling to form a negative opinion when asked how far their skepticism went, showing that there are still unanswered questions and loopholes yet to be made common knowledge.

Fig. 15. Survey responses to Q.8

Content Analysis of Question 8.
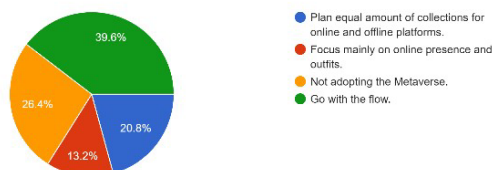
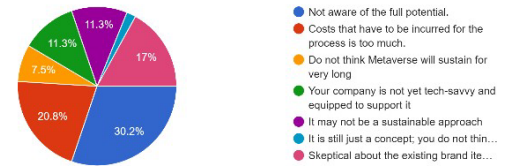Fig. 16. Survey responses to Q.9

Fig. 17. Survey responses to Q.10

Questions 9 & 10, focused more on the take of these respondents as future and current design professionals. At the same time, while some thought about how and if they will be ready to adopt Metaverse when it releases in full swing, a majority are willing to go with the

flow and react as and when the opportunity presents itself. Thus, making ultimate statements about whether the Metaverse is worth the hype stands insignificant.
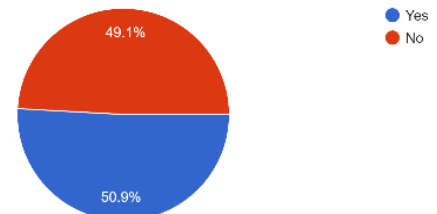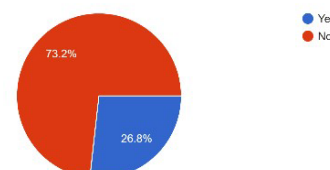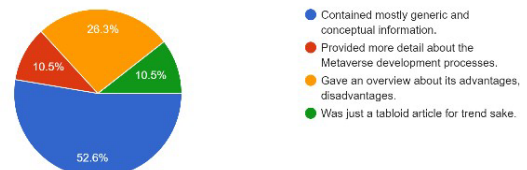

Fig. 18. Survey responses to Q.11

Afterward, to test the in-depth knowledge of the many terms related to the usage of Metaverse, the knowledge of a simple yet tricky name for the Internet of things we currently use, Web 2.0, making Metaverse Web 3.0., was checked among the participants.

Surprisingly, the answers were scaling at near 50:50.

Do you think the Metaverse will lead to more problems than solutions for brands?
54 responses

- Yes, it is not practical.
- No, it is the best type of evolution
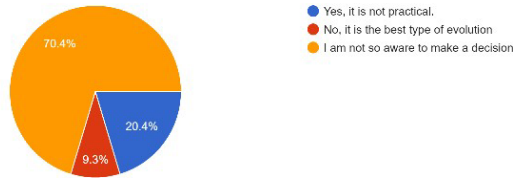- I am not so aware to make a decision

Fig. 19. Survey responses to Q.12,13 & 14

Some other questions were proposed to know the extent of discussion the respondents have participated in related to this topic. Not surprisingly enough, 73% had not yet been a part of such a detailed discussion in the past, meaning the conversation is just getting started.

The current status of individual awareness of these people poses another excellent need to extravagate and determine more and more facts revolving around the stable realization of the Metaverse.

Would you like to give or share any other opinions on the matter with us? Click Yes, to get us to connect back to you.
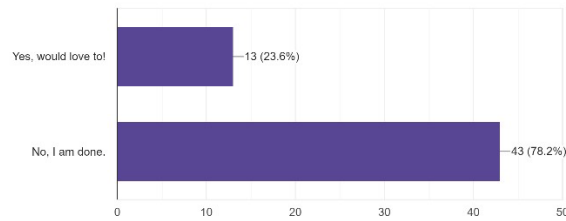55 responses

Fig. 20. Survey responses to Q.15

6. Case Studies

Case studies were chosen from the recently revealed non-fungible fashion collections. Two primary sub-groups are used to categorize case studies:

- Collections from well-known fashion houses like Dolce & Gabbana et.
- Fabricants, a fashion house with just digital collections.

A. Dolce & Gabana

At the Dolce & Gabbana couture event in Venice in August 2021, Collezione Genesi made its debut. This nine-piece, unique collection was created by Domenico Dolce and Stefano Gabbana, especially for UNXD.

1) The Alta Moda (women)
2) Alta Sartoria (men), and
3) Alta Gioielleria sub-collection

Of this collection feature museum-quality goods and handcrafted items (high jewelry).

This collection is the first-ever NFT and digital fashion initiative from D&G, and it also produced the brand's first actual digital product to help bridge the gap between the virtual and real worlds.

The digital pieces include:

1) Two gold and silver iterations of The Dress from a Dream, with glittering beads and crystal accents, made up five of the nine pieces that were actual Dolce &

Gabbana masterpieces.
2) Two gold-plated and gem-studded silver crowns known as The Lion Crown and The Doge Crown; The Glass Suit, an emerald green men's suit with subtle embellishments.
3) Three men's coats and The Impossible Tiara were among the only-digital items. (Changiz, 2021)

Nonetheless, this project has three unjustifiable weaknesses, including:

1) Lack of intelligent contract and storage method • Untraceable transaction and asset history.
2) Lack of final format of digital twin and presentation of some renders.
3) Emphasize the physical rather than the digital side of an NFT collection.

Also, using obscure marketplaces, like UNDX (a controlled marketplace for digital luxury and D&G culture alone, with this collection built with and auctioned by UNXD), could be highly damaging to the audience and encourage related fraudulent activities.

Fig. 21. Credit: UNXD, Dolce & Gabana. Official Website

B. Fabricants

The fabricant is a digital design studio headquartered in the Netherlands that aims to create a new market for digital-only clothing. Kerry Murphy, the company's founder, described their operations in an interview with Business of Fashion: Before the Covid situation, businesses believed digitalization was an excellent strategy.
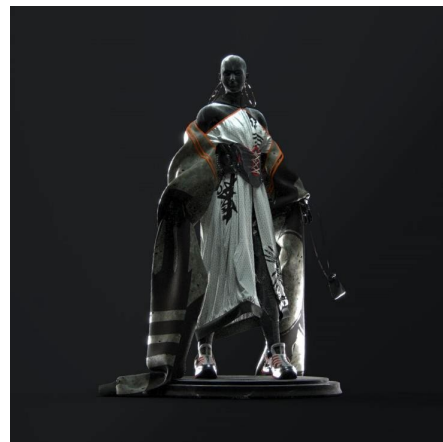
C. RenaiXance

Fig. 22. Credit- The Fabricant, Official Website

This fluid, genderless collection acknowledges a spectrum of possibilities on the fabricant's official website.

RenaiXance challenges us to use the digital environment to question the status quo.

The collection has nine NFTs, each with a rich mythology and based on video game characters, but they have been remixed to fit The Fabricant's "Pluriform" design philosophy Since we can express various personalities and identities online, we think that fashion should be genderless. Customers will receive a code that they can use to wear and transfer their new clothing into online platforms like VRChat and Sansar, which can port into metaverses or games. Users can wear this digital wear via Snapchat and observe it in augmented reality.

The digital product is also carbon neutral and has substantial, sustainable value.

Murphy assumes that The Fabricant's audience is made up of Digi-Sapiens, who are "environmentally conscientious," "collaborative," and "Digi-savvy," according to Murphy. To fast respond to changes, they can quickly upgrade with new technologies and follow fashion.

The Fabricant attempts to produce hyper-realistic digital craftsmanship to convey conventional system ideals regarding human needs and culture in the digital sphere. (Changiz, 2021)

However, the fact remains that focusing on a niche market does not account for inclusivity at all since most fashion consumers are left in the dark about the technological advancements people need to be aware of in order for the Metaverse to take up a permanent spot in their lifestyles.

7. Results and Inferences

Keeping in mind the facts and data presented above, we can now come to the results and inferences one can derive from this research. The inferences carried out below were done keeping in mind three end-users or target subjects- Fashion consumers, brands, and designers.

A. For Fashion Brands

The following inferences in terms of fashion brands and businesses from the primary and secondary data collected-

1) Non-realistic digital clothing is considered commodities rather than media surfaces, and artificial scarcity makes such goods valuable in the virtual worlds and online games (Edward Castronova, 2005; Lehdonvirta et al., 2009; Särmäkari, 2021a). However, what happens when this scarcity becomes a regularity? Loss of exclusivity and, in turn, the demand for the specific NFTs will come down as well as the risk of losing a unique brand identity may be diluted due to virtual ease of access around the world.

2) While the marketing benefits of digital fashion and NFTs may now be apparent, fashion brands still need to distinguish between hype and real opportunities to create enduring income sources from the Metaverse.

3) According to metaverse enthusiasts, fashion firms have a commercial reason to invest in virtual worlds. Due to technological limitations, a fully developed metaverse consisting of a networked, virtual ecosystem that intersects with or offers a different version of physical reality is not yet feasible. However, brands' experiments with metaverse concepts, such as extended reality, gaming, and non-fungible tokens (NFTs), show the value of virtual activities as a community- and marketing-building strategies for the fashion industry.

4) Identifying propaganda and bias in communication-related to Metaverse is also one of the critical discoveries of this paper. Most of the narrative regarding the Metaverse mindset could be considered hype created by business giants for monetary gains and monopolization. According to some bullish experts, the fashion industry will have its biggest opportunity since e-commerce if mainstream consumer adoption of virtual worlds occurs during the next five years. According to them, the excitement around the Metaverse will fizzle if technology falls short of expectations or people show reluctance to use virtual places as frequently as some business plans anticipate.

5) There will be substantial revenue prospects for fashion firms even though it is unclear how many consumers would create full-fledged virtual lives and spend most of their time in the Metaverse.

6) When working with user-generated content, extreme caution has to be exercised. If a brand allows its customers the chance to create content on its behalf, there is always a chance that it will create something that does not reflect well on the brand. One must bear this crucial factor in mind before granting customers such authority.

7) Being genuine and honest is crucial in any marketing or branding endeavor. It is critical to maintain a sense of realism and avoid attempting to create a false or manufactured identity for the brand using the Metaverse; this will almost certainly fail and damage the brand's reputation as a whole.

8) The gaming and fashion industry intersection provides a platform for luxury and underground streetwear brands and fans of fashion Finlay Renwick (2020). However, while the luxury sector is expected to recover by the end of 2021, the broader fashion industry is not set to return to pre-pandemic performance until early 2023, leaving a question mark on business models catering to the mass brands which form a considerable chunk of investors in making Metaverse a profitable virtual environment.

B. For the Consumer

Inferences regarding Consumer behavior and trends connected to the Metaverse are as follows-

1) The younger generation is a considerable part of the Metaverse target audience, i.e., 32% of luxury consumers. Thus, one can not disregard the dire implications of the overuse of Virtual Reality Modules. Effects like Desensitization towards

wrongful, dangerous, and violent forms of emotional expression may include one of the many ill-effects of targeting such a young audience. Also, as discussed earlier, the people using the technology will not be unfamiliar with simulation sickness or the Proetus Effect.

2) Deindividualization led by the false sense of self-image will have an everlasting impact on the consumer psyche and send brand strategies in a whirlwind, mostly missing accuracy. The current literature has underlined the importance of AI for customer interactions and digital marketing platforms (Dwivedi et al., 2021a). Based on these findings, we expect that rather than dealing with human company representatives, customers in a metaverse would increasingly engage with AI designed to learn through frequent customer engagement. These connections may go beyond interactions with virtual call center assistants or service robots in restaurants and hospitals to include virtual "friends" who are desired as interaction partners or tolerated at the absolute least.

3) Hence, the Metaverse is expected to fundamentally alter customer, brand, and employee experiences due to the reality dissociation that comes along with modified perceptions of what reality is and how the environment, one's body, and the presence of others is experienced (Kozinets, 2022).

4) According to a recent turn of events, despite an initial spike in usage, both buzzwords appear to be losing popularity, at least based on Google search statistics, showing substantial declines for both keywords. The graph shows that when Facebook changed its name to Meta and began proselytizing about the digital age, interest in the term "metaverse" peaked. Since then, neither Facebook nor any rivals that use blockchain technology have articulated a consistent vision for the world. Even if games like Fortnite and Roblox are further along in this direction than anybody else, video games, many are already metaverse- adjacent, do not appear to care to put a label. NFTs, on the other hand, reached their peak towards the end of January and have since only fallen.
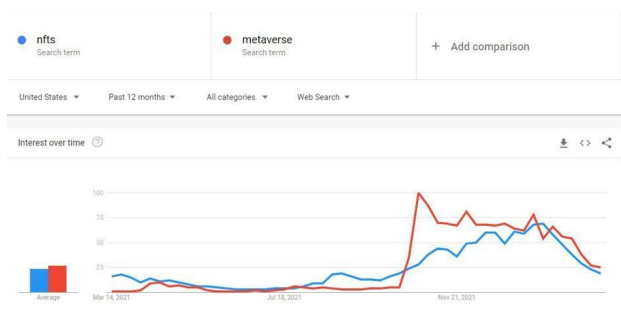

Fig. 23. Metaverse, NFTs, Google Trends

5) Seventy-eight percent of those who have experienced virtual worlds say they miss physical interaction, so widespread consumer acceptance could be a substantial barrier. (BOF TEAM, 2022)

"We buy fashion for two reasons: to protect our bodies and express our identities. Why would we need physical fashion to exist when our identities live in the digital realm?" Amber Slooten, Creative Director and Co-Founder of The Fabricant.

Nevertheless, numerous people expect increased physical linkages. According to Alex Lambert, creative director of content production studio Happy Finish, which has collaborated with Balmain, D&G, and H&M Group, "None of this is really about vanishing into virtual worlds." It is about getting closer to the moment when we can integrate virtual components with the physical environment. Things will start to change once it becomes possible to purchase a virtual Chanel jacket and then wear it in reality. (MCDOWELL, March 29, 2022)

C. For Designers

In the Metaverse, design is more concerned with whether a player is sufficiently engaged to pursue a goal in the first place than how quickly someone achieves their goal—for example, going to a marketplace rather than having access to internet stores where anything can be bought at any time; traveling to meet friends rather than instantly visiting them in a Zoom session.

The product's design must take into account every detail to give the user the impression that they are holding a tangible object because what is being given through the Metaverse is not tangible and is an entirely virtual experience. When using animation and 3D design software, designers can keep the five senses in mind thanks to sophisticated technology. The most crucial aspect of creating for the Metaverse is bringing things to life through design to make them as like life as feasible. (What the Metaverse Means For Designers, Jun 3, 2022) However, do we want to live here, spending daily hours going about our business? To ensure this new environment is secure and comfortable, designers must take on more roles than simply serving as advocates. Negative dark UX patterns will be significantly more harmful, and the cognitive load can be extremely high.

Designers must decide whether consumers will enter an ultimately another world through virtual reality (VR) or augmented reality (AR), which overlays our reality. There are countless options. Designers, however, must also be watchful for any emerging dark patterns that can mislead users into taking actions they do not want to. There is a possibility that cloaked adverts, among other dark patterns, can be mine traps in the Metaverse, aiming to undermine the trust relationship between the platform and the user, similar to the early days of Web2 with packed webpages and ads everywhere. The Metaverse may still include elements randomly appearing in view, making it difficult to focus on, even if we can avoid the black patterns.

These highly lucrative promotional gimmicks have made artists very wealthy, and other creatives are following suit. Aside from the opportunity for a quick buck, design risks become unimportant with this practice's legitimization.

8. Limitations and Open Challenges

A. *Medium Selection for Designers and Consumers Both*

For quick experiences, AR uses lightweight devices, whereas VR generally requires more expensive, hefty gear. Some methods combine the benefits of AR and VR to flip between AR and VR in a single piece of hardware. Even though this technology uses AR and VR in different ways than a single-model device, it is more expensive and cumbersome. Also, while designers want an immersive design process integrating the Metaverse while creating something, physical challenges in these gears could occur, restricting movement and freedom of choice. On the other hand, holograms are a relatively new technology in the Metaverse, but their fruitfulness in the design field is yet unknown.

B. *Copyright & Ownership of Digital Art*

It belongs to the element of art that intrigues the least. A great work of art may use innovative methods, have a pleasing formal composition, or be symbolically complex. It might cause viewers to feel something or think about crucial problems. Ownership, however, does none of these things. A tiresome procedure necessitated by an economic system where property owners get value from other people's labor, ownership is merely an administrative addition to art creation. First, artists who already have enormous fan bases—such as well- known performers Grimes, Snoop Dogg, and Eminem, all of whom recently released successful NFT collections—are the ones who stand to gain the most from the NFT bubble. If money can be made by releasing tokens, it will mainly go toward a select few who are already wealthy rather than the struggling many.

Second, developing an NFT is not free; much like a pyramid scheme, it necessitates risky investments into bitcoin exchanges on the part of the developers. More designers, especially those who are least qualified to do so, will suffer than those who have benefited from the hype machine. Above all, NFTs jeopardize sharing, the most avant-garde and audacious aspect of the Internet. Sharing is a nourishing act of solidarity because it is inherently more pleasurable and resource-efficient than the kind of private, isolated ownership that materialism promotes. However, every time something that could have been sold is shared, an opportunity to make money is missed. For this reason, large tech and finance are cynically investing money into developments in cryptocurrencies like NFTs.

NFTs are wholly uninteresting as works of art, but they may be much more harmful as a way of turning the Internet into a marketplace for possession rather than a space for sharing.

Not many formats have been investigated (French artist Joanie Lemercier). The fast video loops and jpegs that are the norm are not the best we can offer, in my opinion. Another significant concern with NFTs is their impact on the environment. After learning about the associated carbon emissions, many producers, like architect Chris Precht, decided to delay new releases. (Harper, May 03, 2022).

The low-level graphics of digital fashion shows, compared to other digital fashion goods, are a famous critique, aside from logistical difficulties in the recent digital virtual era of fashion shows. Newcomers who attend on PCs with inadequate hardware may feel slightly let down by how the world seems. Have things improved since 2015, when the graphics were jerky and looked like they were taken from Second Life?

According to the organizers, the main reason is that wi-fi and ordinary computers do not always have the power necessary for high-fidelity experiences. Many have compared the graphics of Decentraland to early Web 1.0 websites because, in the words of Jason Rosenstein, CEO of NFT auction house Portion, who is collaborating with Plein to create the virtual Plein Plaza, "They threw us back 25 years in terms of resolution. It is not easy to get a wearable to look all right. In particular, digital fashion products are restricted to a small number of polygons, which drastically restricts the textures and nuances of clothes, incredibly individual items. According to Rosenstein, designers with high-fidelity 3D versions must drastically simplify their aesthetics for Decentraland. (MCDOWELL, March 29, 2022) (Goldman, Nov. 01, 2022).

C. *Design Ethics*

Living inside a simulation of reality may appear comforting on the surface, but from the standpoint of professional design ethics, it is dystopic. In essence, decoupling design from reality is what the financialization of markets in the 1980s accomplished. The fundamental goal of design—improving people's lives in tangible ways—is hollowed out. Beautiful renders can be shared on social media and sold for money, but they have no real impact or significance. Design becomes egotistical, pretentious, and shallow.

Designers should be extremely wary of where this is going before diving right into learning how to design for the Metaverse. It is wrong to commoditize "design" as an aesthetic and economic endeavor with no practical application or value to people.

Designers will need to widen their skill sets to encompass a variety of new disciplines because designing for the Metaverse entails developing a new, immersive reality. As Bartle notes, designers must learn everything from anthropology to economics. The cause is that those who create virtual worlds are eventually constructing human cultures.

D. *Sustainability Quotient*

Every computer on the Ethereum network competes to apply a proof-of-work (PoW) method to verify every NFT issuance and sale because most NFT marketplaces use the Ethereum blockchain. The usage of energy is a significant amount.

9. Scope of Future Studies

A. *NFTS, Metaverse and NFTs*

On the Metaverse, non-fungible tokens (NFTs) have gained popularity. NFTs are distinctive digital assets built on blockchain technology that the owners of metaverse platforms or content producers construct to monetize them (Chalmers et al., 2022). Scholars may investigate the main factors influencing metaverse platform users to buy NFTs. The protection and validation protocol for NFTs and the associated matrix need to be investigated. In order to suggest a model

governance structure for regulating NFTs and related features, it is also necessary to compare the governance and legal concerns in NFTs across various locations.

B. Does Physical Contact Improve the Metaverse?

Numerous significant businesses have invested in the Metaverse, demonstrating its potential as a business model. It makes use of fast Internet in addition. It takes advantage of XR technologies and the fast Internet. However, it needs equipment, such as AR and VR headsets, and additional studio audio and video equipment to give it a polished appearance. It would be intriguing to investigate how adding more tangible elements to the Metaverse may elevate the customer experience. Because immoral design will be visible in the Metaverse, designers can expect scrutiny beyond anything they have ever experienced. Online, what do we own? The immersive human perspective of the Metaverse will make these challenges more concrete, even though they appear to be abstract now.

Additionally, designers might see more overt signs of player unhappiness. When creating and facilitating efficient journeys, businesses must first have a thorough understanding of their customers. Like websites and other online services, metaverses might be able to adjust to a user's expectations depending on their profile data. In these circumstances, touchpoints can be tailored to consumers to exceed their expectations and boost customer satisfaction (Halvorsrud et al., 2016). Touchpoints are service interactions that a consumer has that are either directly or indirectly related to a specific brand, influencing their perceptions and assessments of the brand as a whole and their customer journey (Baxendale et al., 2015; Clatworthy, 2011). Throughout the consumer journey, interactions with metaverse touchpoints could be measured and monitored.

C. Personalization Equipped Technology

Personalizing the experience is more difficult in shared virtual spaces since various users may have different expectations. Limiting access to a virtual space to a specific number of users may help mitigate such a problem. By assigning users to spaces most similar to their tastes, load balancing customers among several instances of a retail space might help change an impossibly difficult optimization problem into one that may be achievable. The aforementioned suggests that a trade-off must be made between designing areas for concurrent multi-user interaction and optimizing the user experience for any given client. On the plus side, when these interactions are available, there may be chances for co-creation that extend beyond the merchant and the client and between clients.

Metaverses can serve as a stage for staging a complicated network of relationships between different characters, whose interactions and interdependencies co-create value and affect one another's reactions (Varna, 2019). These interactions can involve human users and AI entities (like retail assistants) who can take on any appearance the retailers like and communicate with other users in the same way via text and voice. (SANG-MIN PARK AND YOUNG-GAB KIM, January 4, 2022). At

the same time, though, there is a risk that such interactions will result in the opposite effect and be detrimental to user experience and the system's overall well-being (Pĺe & Chumpitaz C. aceres, 2010).

Customer experience, personalization, segmentation, and collaboration—crucial for other digital and social media marketing and channels (Dwivedi et al., 2021a)—are probably crucial considerations for managers when it comes to influencing consumer behavior and well-being in metaverses as well.

D. Products Found in Metaverses

How things, especially real-life ones, will be exhibited in virtual places is a possible key success factor for metaverse shopping. Platform capabilities and user interfaces can significantly influence customer perception of product representations and their authenticity and realism. It has been demonstrated that the simulated experience is related to purchase intention through engagement, enjoyment, and satisfaction (Papagiannidis et al., 2013, 2014). One may imagine that when it comes to communicating product features, virtual worlds could either imitate current techniques and media. They might describe products and demonstrate how to utilize them through text, images, and videos. It may seem frustrating that the products are not yet three-dimensional images.

What would set apart a metaverse store from others in terms of characteristics?

Electronic ones that provide the exact content on several desktop and mobile devices, perhaps more conveniently? From the consumer's viewpoint, not fully utilizing metaverse features may be perceived as a barrier for users who want to try a product before purchasing it.

Customers could test products, but how will the virtual experience compare to the actual one? If the experience is subpar, it may negatively impact satisfaction with the metaverse strategy, the item, the brand, and the merchant.

According to Castronova (Castronova, 2005), retailers and customers can participate in a dream taking place within the walls of the synthetic world. If all does not go down well in the dream, they will kill it, leading to a tremendous loss of resources.

Development challenges in Terms of Tech and Design Principles:

In Metaverse, there is much work to learn before someone starts developing without experience because it is a comprehensive solution in which multiple jobs co-occur in a complicated manner (for example, multi-mode and multi-tasking). There are few online learning materials for Metaverse development, especially for new developers. In order to create elaborate and realistic implementations (such as item selection, conditional actions, user storyboards with scene flow, teleportation between scenes, movement, and dialogue), more information is needed. To co-develop without having to design the entire system, each developer needs a collaborative system (i.e., a platform and developer community). A commercial platform (like Roblox) with good maintenance and an open

source-based platform (like Unity) with a range of options are considered when it comes to the platform. The developer community must divide threads based on a well-organized taxonomy and maintain a team of leaders in each technological domain because the Metaverse's technology aim is broad.
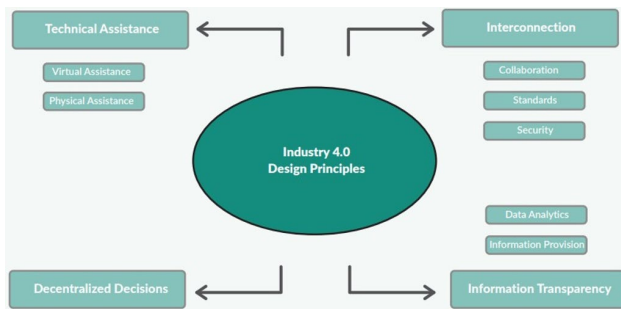

Fig. 24. Industry 4.0 design principles (Hermann et al., 2016)

Creating high-level concepts that can be applied to many IT fields is difficult. In artificial science, theorizing is particularly challenging; present technology's complexity and rate of change constrain our ability to develop universal and high-level theories. ACM and Vaishnavi Digital Libraries (2009). As a result, the idea's breadth and degree of generalization are probably. We require a design science that is teachable, analytic, partially formalizable, partially empirical, and intellectually challenging.

According to Gurjanov et al. (2018), as mentioned earlier, the implications are now being utilized to establish design guidelines for Industry 4.0 scenarios; these design principles assist businesses in identifying potential Industry 4.0 opportunities that may be practically utilized and implemented. The industry 4.0 components would be used to create six design principles (Changiz, 2021).

10. Conclusion

The Metaverse, a vast online virtual universe, is everything the real world is not: it is a place without viruses where we are free to be anyone we choose and communicate with other made-up beings from all over the world. In the Metaverse, there are no physical restrictions on creating a fantasy, so looks, count. Last but not least, the Metaverse has a flaw in scent and touch sensors, and the social network is unstable. The new method of approaching the value chain and the digital comprehension of intelligent contracts is, therefore, the industry-level ecosystem. The development and adoption rate of technology will influence how quickly this business model advances forward and backward.

Nevertheless, we are moving in the direction of the metaverse platform industry.

The blockchain and all it has produced might not be going anywhere, but all the claims that NFTs will take over the world and that the Metaverse will give rise to web 2.0 seem to be mild, over the top. However, for the time being, interest in both is decreasing. I wonder what will happen to the millions of NFTs held when the speculative market no longer operates as it did at

its peak. I would not be shocked to see these concepts reemerge later with new names to feel fresher. We are going to find out if we continue on our current course. As the Metaverse becomes more pervasive than before, the natural world will not disappear.

Additionally, adoption will not happen overnight but rather gradually. We will need to consider the experience's worth, much as we did when we first started developing experiences for mobile. How should the metaverse experience be handled? Is it a copy or perhaps an extension of the product that exists in reality? Or is it something entirely different altogether.

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