

# E–Commerce on Metaverse as the New Virtual Universe

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**Abstract:** Many innovations and advancements have become inevitable with the development of technology. Metaverse is a virtual universe emerged as a result of these technological developments. The fact that many global companies are a part of and contributing to the Metaverse has made this environment more prominent. There are technologic developments made the emergence of the Metaverse possible. Artificial intelligence, internet of things, extended reality, virtual reality, augmented reality can be considered among these developments. The internet has become a part of people’s lives. The reason why the internet holds such a great place in people’s lives is that their buying behaviours, many daily activities such as communicating and socializing are defined by the internet and only keeps getting greater in this day and age. In other words, Metaverse is the virtual twin of the physical universe. The fact that e-commerce is on the rise for the past few years and improves user experience by offering new alternatives as it utilizes technological advancement is what makes it preferable for people. This paper focuses on technologies that constitutes Metaverse such as Web 3.0, Virtual Reality and Augmented Reality and their correlation. E-commerce is examined on the basis of these concepts. The aim of this study is to clarify the technological developments that are globally prominent as of late and to evaluate the relation between these technologies and the notion of e-commerce.

**Keywords:** Metaverse, Virtual Universe, E-Commerce

**JEL Classification:** O33

## 1. Introduction

The term Metaverse was first used by Neal Stephenson in 1992 in his book Snow Crash. Metaverse is also called meta universe or beyond-universe. Metaverse, which is believed to be the next phase of the internet, is a virtual universe that is the digital twin or the physical environment. It is a three-dimensional virtual universe that allows people to experience any activity they could or could not in their physical lives by interacting with digital twins or avatars they create. This universe can be experienced

through Virtual Reality equipment and Augmented Reality glasses which enable people to experience this universe. These equipments that make the access to this universe possible will continue to develop (Baltacı, 2023).

The notion Metaverse, which is a portmanteau of the Greek word “Meta” and the English word “Universe”, means universe that is beyond. As a result of the developments across e-commerce, new features such as online commerce, e-catalogue, e-payment are being implemented, therefore the brands are paying great attention to these advancements with how they are considering big sums of investments. Thanks to these developments across e-commerce, a consumption-oriented environment like no other has emerged. Many brands are working to exist in the Metaverse as well. Brands such as Gucci, Louis Vuitton, Nike, H&M are currently focused on this vision (Durukal & Armağan, 2022).

E-commerce giants Amazon has been working to create a virtual shopping experience in the Metaverse in which they are building a virtual shopping mall since 2018. Gucci is one of the brands that are present in said universe through utilizing augmented reality applications (Hwang & Lee, 2022).

Metaverse technology offers many features. These features include but not limited to; multi-technology, socialness, hyper spatio-temporality, accessibility, diversity, equality, humanity. A digital humanity is engrained within as it is not only a universe that is formed with many technologies coming together but also a digital space where people are able to socialize and carry out their daily activities. People are able to perform their daily activities in this world they can access with their three-dimensional glasses through Meta Humans they create. These activities can be going to a concert, shopping or socializing (Ning, et al., 2021)

Walmart, a globally known company, has published a video that showcases shopping experience in Metaverse. The video predicts how shopping experience would look like in Metaverse. In the video it is seen that Walmart offers a unique shopping experience in which they are selling products such as Virtual Reality wine and Virtual Reality milk with their details also presented, one can also view the total price of the shopping cart. It is also possible to wander around the supermarket and its floors and pick up and drop the goods back. With this piece of work, Walmart presented a preview of what sort of experience e-commerce would be (Ayaz & Ersöz, 2022).

Since 2020 Metaverse has become the most interesting and popular concept across the world of technology. With the online game platform Roblox being published, chairman of the board of Nvidia stating that they've set their eyes on Metaverse and the owning company of Facebook rebranding themselves as Meta resulted with this concept becoming more popular. It is possible that a visionary person that is Mark Zuckerberg taking step towards such entrepreneurship has influenced other brands as well (Bozkurt & Gümüş, 2022).

## **2. Technologies that are prevalent in the construction of the Metaverse: Virtual reality, augmented reality, extended reality and Web 3.0**

Metaverse is formed by many technologies and the internet coming together. A digital twin and digital environments are required to be able to experience Metaverse with the help of pair of virtual glasses. First thing required to form Metaverse is to virtually multiply already-existing physical objects, secondly, people create their digital twins that are called Meta Human through their avatars, and thirdly, the connection between the physical and digital world is ought to be bridged (Özenir, 2022). No matter how promising Metaverse's future looks with every technology made Metaverse available and with the existence of Web 3.0, it does not look possible that every prediction is going to be fulfilled. Although there are many companies predicting that Metaverse is going to be the future of the internet. Meta, Google, Microsoft, Samsung, Sandbox, Upload can be considered among these companies. These companies not only invest in the Metaverse but also establish teams with minds that will develop Metaverse. Based on all this, it can be foreseen to what extent Metaverse is going to be a part of our lives (Banaeian & Rad, 2022).

The Extended Reality (XR) technology is defined as technology that included others such as AI, VR, AR, MR. It sets the magnificent communication between physical and digital worlds. Extended Reality is a technology simulating physical environments through effective interaction of time and costs under controlled circumstances (Atiker, 2022). Another prediction is that it may be an environment where wireless charging and internet technology can pass through the walls, wireless networks or lighting where each technological device can be charged, lenses to connect to the Metaverse and digital layer, that is, extended reality applications (Kaya, 2022). Extended reality, which includes many immersive technologies that connect virtual and real world, is a technological advancement that makes it possible to shop anywhere in the world, independent of time and space (Künüçen & Samur, 2021).

Extended reality was initially utilised by gaming and entertainment industries, however in today's day and age it has many uses in various industries and organizations ranging from surgeries, training soldiers to selling luxurious cars. Brands offer people unique experience which creates a buzz and have people talk about them. There are examples of such projects by brands: Pepsi once placed an impressive advertisement on screen with AR at a bus stop in London. People at the bus stop were left mesmerized by the impressive view of a tiger prowling at them. On the other hand, Mercedes offered a virtual experience to people in which they could drive the newest SL line on the Pacific Coast Highway in California. Offering such experiences to the customer triggers a buying behaviour (Marr, 2022).

Metaverse is a virtual world that is dependent on the support of other technologies regardless of space. This virtual world is a magnificent multimedia system (Ünlü, Yaşar, & Bilici, 2023).

Web 3.0 is a decentralized and global blockchain-based version of the internet. In this regard, the blockchain technology is also an important subject for Web 3.0. Web 3.0 and Metaverse technology are emerged by supporting each other. The experience that the Metaverse world will provide to the user is possible with the development of Web 3.0. Features of Web 3.0 include literacy and ownership in interaction, virtual economies as tools, networks in organization, and decentralization in control. The development of Web 3.0 will have an impact not only on Metaverse but also on other technological advances. With Web 3.0, the Internet of Things (IoT), i.e. smart devices communicating with each other, creating big data in the process. Big data is the data that feeds all these technological developments. It particularly refers to a data that reveals artificial intelligence (Ağgöl, Yalçın, & Yalçın, 2023).

Augmented reality is a kind of preview to the Metaverse technology. Augmented reality technology is formed by combining the physical elements we perceive with computer-generated data such as graphics, video, audio, GPS. In other words, virtual elements integrated with real world entities are displayed. Brands such as IKEA, BMW, Adidas, Volkswagen, Marshall have used augmented reality applications to provide this experience to consumers. This technology gamifies consumption and takes the experience to the next level and draws the consumer in. In another sense, augmented reality can be considered as the first step in the formation of the Metaverse (Yengin & Bayrak, 2018).

Virtual reality is a technology that connects reality with the virtual through technological glasses and other technological equipment. Virtual reality applications are utilized by museums, brands. Louvre Museum is an example to these applications (Tanrikulu & Karagöl, 2021).



**Figure 1. Digital Marketing Cycle**

**Source:** Jaclyn Trop, 2022 “Holoride’s in-car VR tech is coming to Audi this summer”

Audi, which has a striking and entertaining design with their virtual reality practices, provides a unique experience to the users. Based on such an experience, impressed users will most likely buy the good or the service, or at least talk about it.

### **3. Metaverse, The Future of the Internet**

Metaverse is among the most popular technologies of Web 3.0, which is a major step in the digital transformation of Internet technology and will radically change the future of the Internet. Metaverse is a real-time technology that offers a completely virtual experience regardless of time and space. Metaverse has the potential to revolutionize physical socializing, working life, as well as lifestyles. It offers the consumer and the user an immersive experience with virtual reality technology. Metaverse is a digital environment where every user can create content (Yüksel, 2022).

Metaverse, the technology that connects the real universe and the virtual world, can affect the exchange of information and the lifestyles of the constructs. This technology, which is predicted to take the place of the Internet in the future, is also seen as a space that individuals will seek to use to escape from their daily lives. Individuals can filter out situations with which they are uncomfortable with and have

the opportunity to live the life they wish in the Metaverse universe. Consumption will be inevitable with this situation. In this universe where Meta Humans will exist, there will be a need for materials and consumption for social reasons or for various reasons. Of course, companies are taking advantage of this situation and making serious investments in this very young technology (Doko, 2022).

Metaverse technology, which is quite new, is gradually developing and promising for the future. While the development of technologies such as blockchain, augmented reality and virtual reality have a great impact, the interest and involvement of companies such as Microsoft and Facebook reflected in the media provide an insight into the size of this field. Therefore, the Metaverse will revolutionize many areas from e-commerce to media, entertainment and real estate. This new media revolution will be followed by the companies that lead the technology (Grider, 2021).

Considering the industrial effects of the metaverse in the context of digital transformation, quite radical changes will occur in visual media tools, social media platforms and the cinema industry. The most important factor that engages people in this technology is, of course, the sense of reality. With the technology that is developing with each passing day, it will become possible to watch a movie or a series in the real world with the feeling of being a part of it (Srushti, 2022).

With their vision and commitment to the Metaverse technology, large investors are interested in the Metaverse technology and have commercial expectations with the recognition of this new media. The Metaverse, which offers digital products and experiences to consumers, provides new opportunities for investors. The Metaverse, which will replace the Internet in the near future, will have a role that will have a major impact on people's lives (Kuş, 2021).

There are unique opportunities for organizational, political and social leadership in exploring and developing Metaverse technology, which is an important milestone in human history for every individual. It is foreseen that the best use of Metaverse use cases will be measured not only as a means of short-term economic and commercial gain, but also in planning to address issues of concern for humankind and the world. For example, with regards to global warming, how can the concept of climate-neutral energy be managed? How can digital systems in this field be utilized to prevent a war, improve an election, reduce crime and poverty rates, and end human rights violations? In such worldly issues, it is necessary to plan how the Metaverse can be utilized and to carry out serious studies on this subject (Smart, et al., 2007).

It is possible to come across the term “digital office” commercials across the social media platforms. Especially with the fact that companies switched to and later continued to work from home resulted with the attention to the Metaverse rising. An exemplary study was conducted on this regard by Horizon Worlds. It is going to be unavoidable for the companies that choose technology in the future (Güler & Savaş, 2022).

The metaverse is not limited to games but is predicted to revolutionize almost every industry and other functions of companies, from healthcare to consumer products, entertainment and business-to-business communications to real estate. This will, no doubt, lead to the emergence of new industries, markets, resources, new types of skills and professions. Therefore, the development of engineering on this regard will be inevitable (Hollensen, S., Kotler, Opresnik, & M.O, 2023).

#### **4. Relationships That Brands Will Develop with Consumers in the Metaverse**

The game industry's relationship with popular culture has created a commercial gateway for the fashion world. Games are not only a means of entertainment, but also a platform for brands to design collections and make sales. The famous designer Virgil Abloh, who said that one of the important motives of individuals who will meet their friends in virtual worlds as well as in the physical world is to dress up, said that it is easier, and more design products can be owned in the virtual world. The possibility for online gamers to own a Mercedes or a Rolex watch in real life is also a source of happiness. Metaverse, which will take advertising and marketing efforts in the virtual world to a higher level, will develop itself with the inclusion of world-famous brands (Abanozoğlu & Değerli, 2022).

Businesses were caught unprepared when they were first introduced to the Metaverse as they had no digital history. Brands that want a place in the world of Metaverse are required to improve not only their management and organization strategies but also their perception of e-commerce. Since the world of Metaverse is very complicated, it requires a multidisciplinary business development. It is of great importance that brands proceed in an organized manner and gradually plan every step in their business development in order to earn themselves a place in this world (Bourlakis, Papagiannidis, & Li, 2009).

People are spending more time on the internet in comparison with past year. Consequently, newer relationships and social spaces are formed. This new type of consumer does more than just socializing, work on the internet, they shop, they conduct research regarding new products and services. Based on this information, a study was conducted on the buying experiences and buying behaviours of consumers on the Metaverse, the future of the internet. In this study, consumers' emotions during the buying process were examined and it was concluded that they experience emotions similar to those they do in real life, as a matter of fact, they were observed to enjoy shopping on Metaverse more at certain times (Soares, Leite, Salazar, & Giesta, 2015).

Metaverse consumers not only shop, but it is also available for them to perform activities such as buying land, starting a business, buying planets, watching concerts, visiting museums, and traveling. Metaverse consumers experience shopping with special non-fungible digital tokens called NFTs. The only difference compared to the real life experience is the payment method, which gives the user a different experience. It is suggested that Metaverse users are interested in innovation and that innovation positively affects the user experience. Communicating with consumers on the Metaverse is of great importance for brands to sustain their existence in the future. All innovations and developments that brands will make towards this direction will benefit them (Jeon, 2021).

World's most powerful brands carry out many projects to be prepared for the Metaverse. Zara, fashion giants, being one of these brands. Being an innovative and technology-oriented brand, Zara first set their goal of digitalising back in the year 2018. Making great sum of investments in digitalisation, they initiated their Metaverse projects by adopting the Direct to Avatar business model to interact with digital users. They are aiming to include their customers through social media and prepare them for the technological advancements to come with their digitalised stores. Zara has adopted the vision of being an innovation-oriented company and offering extraordinary experiences (Katircioğlu, 2022).

A luxurious Italian brand, Gucci, rolled up their sleeves to get into the Metaverse, offering their own piece of experience in The Sandbox. Gucci is the first luxurious brand to every establish their own digital world in the Metaverse. This Gucci experience includes the "Gucci Vault Land", an experimental place that provides a digital adventure throughout the history of the fashion brand through games and NFTs. The reason behind this initiation of Gucci is that Gucci wanted to increase the



physical sales of their products and selling digital versions of their products to Metaverse. The activities that can be performed in the Gucci Vault Land can be listed as:

- Gathering information regarding basic principles of Gucci through NFTs.
- Purchasing digital collection and competing with other players.
- Winning blockchain-based prizes and playing games and completing missions in order to consolidate the information the users have learned.

Considering the fanbase of Gucci, it would be beneficial for them to be present in the Metaverse as it will help them to reach younger audiences (Marr, Forbes, 2022).

A Gucci handbag was sold 350.000 Robux (approximately \$4.500) in the game Roblox, which costs \$800 more than its physical counterpart. This really puts it into perspective how promising commerce in Metaverse is. It proves the potential of commerce in the Metaverse (Franks, 2022).

One of the luxurious retail brands, Burberry, took their commitment to the gaming one step further. They collaborated with Minecraft to release their in-game adventure, Burberry: Freedom To Go Beyond. The game allows players to wander around the streets of London with Burberry themed characters and motifs. Burberry provides a gamified experience to their users by this means (Tan, 2022).



**Figure 2. Burberry x Minecraft**

**Source:** Burberry X Minecraft, 2022 "From Digital to Physical Adventure Awaits"

Field of practices of Metaverse are seen to be e-commerce, gaming, concerts, entertainment. However, its uses can even be expanded to business meetings, press conferences and team meetings for brainstorming. In August of 2021, Mark Zuckerberg attended to the press conference of Facebook, in which he announced that the name of the owning company is rebranded as "Meta", using his very own avatar. In this press conference he introduced Horizon Workrooms of the company Oculus at its beta stage. Horizon Workrooms is a three-dimensional digital platform where attendants can only join with their avatars (İçözü, 2021).

In addition to hosting many brands within its world, Metaverse can also be seen in the fields of art and entertainment. The concerts held within the Metaverse particularly piqued mainstream attention. The Marshmello concert in the video game Fortnite on 2nd of February 2019 received millions of viewers. In addition to this event, Fortnite also collaborated with famous rapper Travis Scott, hosting a concert in Metaverse. Justin Bieber and Ariana Grande also have held concerts in Metaverse, thus an industry that is worth millions of dollars has emerged (Averbek & Turkyilmaz, 2022).

It is inevitable that most activities we perform in our daily lives will shift to our digital lives through Metaverse technology. It was not predicted thirty years ago that the internet would come this far, therefore it is only natural that it cannot be foreseen that the Metaverse can replace the internet. Though the fact that beta projects on this technology across many industries is carried out and utilized in various industries and is preferred by a good number of users shows the promise of the Metaverse. Considering the projects conducted in Metaverse, it can be said that there are many companies that are well aware of this prospect. Brands and companies of today ought to follow Metaverse and technologies that are forming it and direct their investments based on these technologies in order to avoid falling behind in the future.

## **5. The Case of Metaverse as the Future of the Internet across E-Commerce**

In the recent years, especially after the Covid-19 pandemic, the size of e-commerce has grown greatly, and user experience were immensely improved. In addition to this, the logistics aspect right after the users' experience on the website is also very important to be reliable and fast in terms of the user's physical experience. The fact that e-commerce grows bigger every other day, offers simple solutions and there are many options available on this regard increases expectations of users every passing day. Developing technology and the rapid adoption of this technology by young

masses are of great importance for e-commerce companies. Younger audiences have already begun to embrace Metaverse, which is predicted to overtake the internet in years to come. One of the main reasons behind this belief is the fact that many successful and popular brands across the world are leading this universe. Based on all of this, a consumer is going to be able to have the experience of going to a supermarket or a store with just Metaverse equipment. It won't take long before users will be able to go shopping with their friends exactly like they do in real lives. They'll be able to view racks in a market, read product details and drop products they no longer desire back to their place, just as they are able to in physical life. As a result of this experience, shopping will become effortless and bought products will be delivered to desired address (Gölbaşı & Gökçek, 2022).

The concept of game theory, first ever mentioned by Von Neumann and Mergensern in their book "Theory of Games and Economic Behavior" in 1944, sounds as if it was contemplated for Metaverse. This game theory that improved over time suggests that people do more than simply connecting to digital environments, they experience this digital environment through the reality they live in, and this causes their tendencies to change, consequently business models, strategies and marketing practices differ. According to the game theory, which recognizes digital users as customers, a digital revolution has occurred. Plans and strategies are ought to be established and trends should be followed withing the framework of the game theory. Naturally one must consider these plans and strategies within the limits of requirements and imagination of Metaverse (Alankuş & Anıl, 2022).

With the development of technology day by day, digitalisation has been embraced more and more in every aspect of people's lives. Accordingly, the amount of time people spend looking at screens has increased. This increase has revealed the trend towards digital environments such as augmented reality and virtual reality, which take users to an exciting experience in a virtual world. The adoption and development of these technologies by the world's giant technology companies such as Epic Games, Roblox, Microsoft, Nvidia will contribute to every aspect. Many companies that shape consumer behaviour lead the industries by diversifying the user experience by engaging in the Metaverse. Brands investing in this field, following technological trends and implementing them in their business will serve as a guiding trend in consumer behaviour (Ayдын, Nalbant, & Ozat, 2023).

In the age of Web 3.0, brands see Metaverse technology as the most important promotion tool for the market. The conventional market approach will expand with

Metaverse and reach a different dimension. The adoption of Metaverse by rapidly developing and world-leading brands is likely to make it a prioritised technology. Brands that want to successfully carry out their presence in the Web 3.0 era will need to consider this situation for their brand image. As the target audience has different expectations day by day, companies should not remain unaware of this situation and carry out their work in parallel with technology. Companies can sustain their success by following these innovations, which have become a trend all over the world, and making improvements in existing businesses (Aslan & Kolancı, 2019).

Guven Celikkaya, who is the founder and CEO of e-commerce company Holonext within the Metaverse, emphasizes the importance of augmented and virtual reality, stating they are gradually improving. Text-based internet with Web 1.0 has evolved into image-based Web 2.0 where users are able to create content, hence why he is of the prediction that Web 3.0 with its three-dimensional technology is going to take over in time. He also states that three-dimensional contents sell more and has less refund rates. In the light of these opinions, it is predicted that e-commerce will evolve from two-dimensional to three-dimensional (Yengin D. A., 2023).

## **5. Conclusion and Suggestions**

Judging by the past and the present, the point where technology has reached is perhaps at a point that it could not have been imagined in the past. Humankind, which constantly advances and changes, always progresses and develops technologies. The inclusion of the internet in lives of ours changed the focus of the companies as well. Newer technologies emerged with the internet's switch to Web 3.0. These technologies not only allow users to create content on the internet but also create living environments within the internet.

Metaverse, which is defined as the future of the internet, is undoubtedly going to be the leading technology in the digital world in the future. It has become a brand-new market across the globe. Mark Zuckerberg, one of the leading figures in the technology on the world, rebranding Facebook's owner company as Meta proves the seriousness of the subject. A company that is on the leading spot within the world of technology making such moves can help predict how far technology will go in the future. Companies that are well aware of the screen addiction and know how to influence users recognize the potential of the Metaverse and already began making investments and building teams.

Advancement of the Metaverse technology will give birth to newer industries and fields. Career opportunities within the digital world will be accessible. Leading companies already began setting up new fields of work made possible with the Metaverse. Technology giants such as Microsoft, Alibaba, Nvidia, Amazon have already built teams of Meta engineers. In this field where serious investments are made, brands need to establish teams and follow innovations in order to maintain their sustainability. Otherwise, they are bound to disappear over time in the face of this technology that will replace internet.

Being called the mirror-world of the universe, Metaverse will take over the place of the internet. It is going to be possible to shop through avatars within the Metaverse. People are going to be able to shop with their friends in Metaverse thanks to AR glasses, having the exact same experience as they do in real life. Consumers will be able to add any desired products to their shopping carts and view their features and details. At this point it would not be inaccurate to state that the internet will be as important as electricity.

Metaverse technology, which is predicted to influence every industry in the world, will be prevalent across the business world. It is not hard to imagine a Meta business world where people can attend meetings through digital twins, work anywhere and anytime. Of course, technology giants across the world have already made attempts on this regard. Plenty of equipment is required to fully perceive this experience through every sense. Though it doesn't seem possible for everybody to access to all this equipment at the moment, let's not forget that every person on the world having smartphones and sorting their matters with a single click also didn't seem possible and accessible twenty years ago. People can get anything done, shop and communicate through their smartphones, which are one of the most important devices of current day. The entirety of the real world is simply accessible through our phones in our pockets. So, is it really far-fetched that in 10 years everyone is going to be carrying glasses with them? Of course not.

Metaverse is not a science-fiction anymore, it is the science itself. The world of Metaverse doesn't need to be mirroring real life. Considering that the world of imagination is limitless, it is not easy to predict the things can be done in Metaverse. Signals can be transmitted to our brains in order to utilize all five of our senses in the Metaverse. In this case, users will be able to experience anything they do in real life also in the Metaverse in the most remarkable way.

Many companies already began carrying out projects in the Metaverse, which will undoubtedly have great importance for the e-commerce industry. E-commerce giants such as Walmart, Amazon and Alibaba began preparing for this technology which is predicted to become a huge market. People will desire to own products they already do in the real world also in the digital world. Owning products in the digital world will have the exact same meaning as in the real world. Brands which are aware of this fact will create digital copies of their physical products. It may even be possible to sell these products at higher prices compared to their physical counterparts.

Considering all the information in the literature, this technology that is the reality of the future is inevitable. Just as social media, which was created by the internet, and all the other things linked to the internet has arrived before, Metaverse will eventually arrive. With the fantastic experience it will introduce to the e-commerce, Metaverse may be able to bind the consumer to the brand more. At this age of technology where the experience that will be provided for the consumer matters greatly, strategic planning relative to this case must be a priority. Brands must prepare themselves for this universe in order to survive by acknowledging the reality and making plans and projects.

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