

Entrepreneurship in The World of Metaverse: Virtual or Real?

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Abstract— In this study, an in-depth literature review method was applied. Period; It examines academic studies and current information on the internet and its interpretation of entrepreneurship in the metaverse world. For those who want to be entrepreneurs in the world of Metaverse, business opportunities, conveniences and difficulties of Metaverse are evaluated. The concepts of virtual reality and virtual world, which are the leading steps of the rapidly developing digital age, are gaining importance. The metaverse world, which leads them and breaks new ground in the virtual world, is a universe in which it is predicted that investors will make large investments in terms of technology and economy. For this purpose, the researcher examined studies in the metaverse literature, and as a result of these studies, the subject of entrepreneurship in the metaverse world was discussed. In the metaverse world, the study results on entrepreneurship are seen as an opportunity to be seized economically. Those who will participate in the upcoming metaverse shift will seize this great opportunity. Another finding is that taking place in the metaverse world is not suitable for the time being in terms of costs. To avoid being affected by increasing costs, it is recommended that entrepreneurial individuals first determine a good idea and make a good feasibility study on how to realise this idea in the virtual world. This article is an original study that addresses the benefits, conveniences and challenges of being an entrepreneur in the Metaverse world. The literature review found no investigation on entrepreneurship in the Metaverse world. The fact that the Metaverse has the potential to have great effects on the business world and social life standards in the future makes this research more interesting. In addition, by specifying the impact of Metaverse on the business world, it has been tried to shed light on the problems and opportunities that large or small-scale enterprises and entrepreneurs will face in the future.

Keywords— *Entrepreneurship, metaverse, NFT, virtual world, VR/AR.*

I. INTRODUCTION

Since the limits of innovative entrepreneurship are being pushed in today's world, young people who will produce software and hardware that make life easier need to focus on the little-known facts of the new world and be prepared, the metaverse, also known as the "virtual universe," which is considered as the next stage in the development of the internet, is the name of the perceptual universe in which people feel entirely mentally thanks to augmented virtual reality devices without any physical effort. This universe enables humans to be included in an artificial physical environment thanks to computers, Android devices, and 3D devices. Many people and organizations worldwide are rapidly entering the metaverse process, including foresight about the future. In this virtual universe, which is very popular for entrepreneurs, everyone should have an avatar. We will be able to attend our

Metaverse World meetings by dressing in the clothes we choose with our avatar, voice, and facial expressions. We will be able to travel the world from here and realize many things from our shopping to our investments. For example, wherever he is in the world, he will be able to use this virtual universe when he wants to wander or shop somewhere.

Developed countries and world brands have been working in informatics since the second half of the 1990s, attracting the attention of young people to this field with the guidance and infrastructure of the public. Opportunities await young people in the 'metaverse' world in virtual reality (VR), augmented reality (AR), artificial intelligence, blockchain, 5G, wearable technologies, and sensor technologies. Augmented reality was developed to perform more accurate and necessary improvement activities on three-dimensional structures and provide essential opportunities to the business world and consumers; It is the design of all objects in the real world with computer-generated sound, image, and graphic data and provides a physical appearance. In short, it is the creation of reality by computer [1]. On the other hand, virtual reality is an immersive environment experienced through computers, where users have real-time and multi-sensory interactions. Thanks to these technologies, businesses can easily access the real-world data they need [2].

The Covid-19 pandemic has caused some sectors to enter the metaverse world quickly. Especially fields such as medical, recycling systems, online systems, energy efficiency, green energy, robots, and drone technologies are very attractive for young entrepreneurs. The Metaverse world provides today's easy access to missed opportunities in the past. For example, a young person in Silicon Valley and a young person in Turkey interested in this world can work on the same system. Turkey, which has a young population, needs to act quickly with its institutions by using this advantage. It should not miss opportunities by preparing for the transition to Web 3.0. In this study, the world of the metaverse, entrepreneurship in the world of the metaverse, possible conveniences [3], [4], and difficulties [5]–[7] that may arise in the world of the metaverse were examined within the scope of the relevant literature. In the study, recommendations were made to entrepreneurs and entrepreneurial candidates by making predictions of the metaverse world.

A. *What is Metaverse?*

The word metaverse is derived from meta and universe [8]. The Metaverse is a collective virtual shared space created by the convergence of virtually augmented

physical reality and physically persistent virtual space, including the sum of all virtual worlds, augmented reality, and the internet [9]. "Metaverse" was first coined by science fiction writer Neal Stephenson in his 1992 novel "Snow Crash." The "Snow Crash" metaverse is a hugely popular virtual world experienced by users equipped with augmented reality technology [10], [11]. The realistic virtual world is a virtual space where digital avatars represent people. The virtual world constantly grows and evolves depending on the decisions and actions of society. People will be able to enter the metaverse entirely virtually or interact with parts of it in their physical space with the help of augmented and mixed reality. Metaverse is used to create a virtual digital world and connect this world with the physical world [7]. Mark Zuckerberg announced that Facebook would change its name to Meta in October 2021 and make significant investments in the metaverse [12], [13].

Even if the Metaverse lags behind the fantastic visions captured by science fiction writers, it is likely to generate trillions of value as a new computing platform or content medium. Metaverse is becoming the gateway to most digital experiences, a vital component of all physical experiences, and the next great business platform. The value of being a participant in such a system will also be great. Today, there is no internet owner, but when the most valuable publicly traded companies in the world are looked at, it is seen that the leading internet companies are at the top. For this reason, the metaverse world has the potential to replace the internet and show a remarkable rise in economic terms [14]. The metaverse can produce more and more opportunities than appears on the internet. New companies, products, and services will emerge to manage payment processing, authentication, recruitment, advertising, content creation, and security. This means that many of today's employees will end their jobs or become new job opportunities [15].

Eight "building blocks" have symbiotic effects on the emergence and development of the Metaverse [16]. These are Hardware; Nothing can happen without hardware (physical technologies) that interacts with and enhances the Metaverse. Enterprise hardware is used to operate or build consumer mobile phones, tactile gloves, virtual/AR-based. Networking; bandwidth (speed), latency, and reliability are used as performance indicators. It depends on the quality of the service. Compute; Availability and development of computing power limits define the metadata store. It includes enabling and providing computing power to support the metadatabase while performing various and demanding functions such as physics computation, processing, data reconciliation and synchronization, artificial intelligence, projection, motion capture, and translation. Virtual platforms; users interact with the metadata store, have an interface through virtual platforms, and are accessed from various devices. It includes developing and studying immersive digital and often three-dimensional simulations, environments, and worlds in which users can explore, create, socialize, and participate in various experiences (playing games, education, shopping, listening to music, etc.). Interchange standards and tools include a broadly defined category of different technical solutions, protocols, formats, and services for partnership or interoperability. Payments: It

is generally assumed that blockchain coins will be used for purchases in the metaverse world, but payment systems can also be realized in barter or NFT or cryptocurrencies. Content, services, and assets; Brands will be content providers in the metaverse world. This building block covers all businesses and services on the metaverse and independent content. Consumer and business behavior; It includes observable changes in consumer behavior and business attitudes that are directly related to changes in the metaverse. Figure 1 shows the relationship between these building blocks and four different avatars.

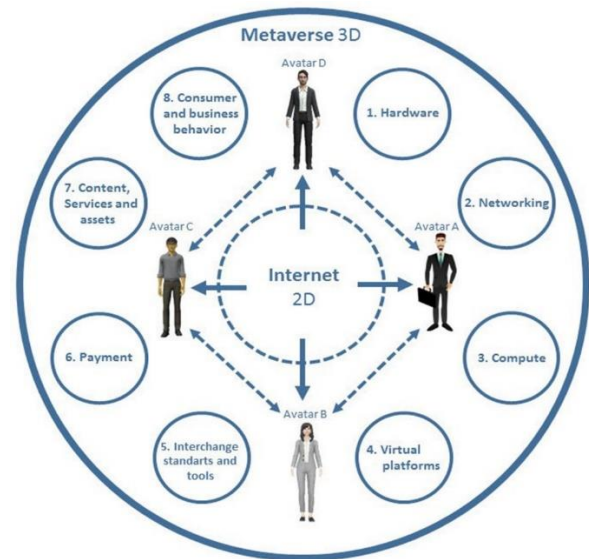


Fig. 1. Metaverse building blocks and acting avatars [17].

Metaverse requires a lot of new technologies, protocols, companies, innovations, and discoveries to work. These will emerge not directly as "pre-metaverse" and "post-metaverse" but gradually as they integrate and merge with different products, services, and capabilities over time. First of all, a few essential elements need to be fulfilled. Metaverse requires infrastructure that does not currently exist. Because the internet has not been prepared with the capacity to handle this experience, it only has the necessary infrastructure for receiving and sending files [18]. Metaverse requires more than what video conferencing and video games offer and a high concurrency infrastructure [19], [20]. Most video chat programs allow up to a few dozen people to talk to each other. If a situation reaches hundreds of people, a live broadcast image of a few people can be delivered to the audience instead of two-way sharing [21]. There are many obstacles on the way to the Metaverse. The biggest hurdles are also hardware limitations. Currently, worldwide networking and computing capabilities will not yet be able to support an enduring digital world that can be experienced in real-time by millions of concurrent users. Even with this level of networking and computing power available, the energy consumption of such an effort would pose problems for both national electricity grids and the environment [22]. If hardware, energy, and technology are sufficient, broad cultural changes will be necessary to foster the development of a true metaverse. Relatively high-quality virtual reality and augmented reality technologies are already available to consumers, but according to the 2020 report by Thrive Analytics and

Yemenici

ARtillery Intelligence, Less than 20% of Americans are familiar with VR headsets. Also, experts predict that devices like VR and AR have a chance to surpass game consoles by 2025 at the earliest [23].

To summarize, Metaverse is a new reality universe and dimension where virtual and real can be experienced simultaneously, formed as a result of combining all virtual worlds and content on the internet, using augmented reality (AR), virtual reality (virtual reality) VR) and blockchain technologies. Without sharp distinctions such as virtual and real in the metaverse, users can access all content and experiences in the metaverse and from anywhere, either in augmented reality (AR) or virtual reality (VR) mode. Since the virtual and real worlds are so intertwined, users exist simultaneously in both environments with the help of their digital avatars, and their actions on both sides affect each other in real-time [24].

B. Metaverse Economy Projects

In the metaverse world, companies will emerge that produce new products and services to manage the new content landscape, computing platform, authentication, recruitment, advertising, security, digital identity and presence, and similar issues. The most important opportunity is commerce, finance, fintech, creativity, virtual environment, different groups, environments, communities, etc. In the metaverse, a single safe environment where the parties that focus on goods or services will work together with a single idea, it is possible to bring reality and clarity to the idea formed. In addition, the proliferation of metaverse and metaverse coins will enable the cryptocurrencies used within their groups to be used as a payment or investment tool between different groups or to pay the fees in the new virtual universe formed with these cryptocurrencies [23]. Blockchain technology, decentralization, and the development and rise of new industries within the metaverse can effectively drive economic growth [25]. Companies need to transform their marketing strategies from buying ads online to existing in a shared, virtual economy. Companies must conduct market research on their new customers in the metadatabase. How people act and their preferences in the metaverse can be different from how they behave in real life and what they shop for. While it is inevitable that there will be ads in the metaverse, brands can be a part of creating the metaverse itself [26].

Today, many world brands invest in the metaverse. For example, Facebook's acquisition of the Oculus company, which works on virtual reality devices, for 2 billion dollars has accelerated the process considerably. Facebook has signed cooperation agreements with essential software companies such as Microsoft in this field. In addition, game platforms such as Roblox continue to make significant R&D investments in this field [25]. This universe should not be considered an area of the game or coin industry. Currently available digital currencies will be used in the metaverse world, including NFTs, for the next period. The metaverse, in particular, is becoming a more attractive alternative world than ever for people to escape to during the Covid-19 global pandemic. The Metaverse will impact small, medium, or large businesses and potentially everyone. Meta is not alone in

pouring millions of dollars into building this digital world. In December 2021, the Republican District of New York made a record-breaking \$4.3 million investment in metaverse real estate through The Sandbox; Just a month before that record, Canadian Tokens.com spent \$2.4 million on digital land on another metaverse platform, Decentraland [11].

C. Metaverse Education and Culture Projects

In recent years, the metaverse has received significant attention worldwide with the development of related technologies. For the Metaverse to be a realistic society with direct and physical interactions, The concepts of race, gender, and even physical disability need to be weakened. It is thought to be very beneficial for society [27]. However, Metaverse development is still in its infancy, with great potential for improvement [28]. Increasing virtual and participatory activities in cyberspace creates new social communication and interaction forms. In this scenario, the metaverse concept is vital to understand how the relationship between virtuality and cultural communication has changed and how this phenomenon plays a crucial role in virtual heritage. The metaverse can also be defined as a virtual place where a cyber community of individuals can share social interactions without the constraints of the physical world [29].

It is thought that people will not wander in the Metaverse one by one but will establish friendships and relationships that will affect their decisions. Brands need to continue to adapt to playstyles and interactions. Customers will be able to talk to brands and interact with them in 3D, like through social media [26]. Innovations in information technology have provided new opportunities for employee training beyond traditional seminars and discussions, such as using low-cost simulations that use virtual worlds as a platform for communication and interaction. At the current stage, virtual worlds and meta versions provide ideal learning environments for tackling a group problem such as culture and allow the creation of potentially complex comprehensive games. Let's take some essential components of organizational culture and compare them with the learning objectives of some traditional games. It is found that the ideal simulation required to solve the problem of culture in organizations consists of a mixture of processes and random events [30].

With augmented reality (AR) and virtual reality (VR) devices, interactive online ecosystems can be created for specific training courses, providing participants with the virtual challenges and tests necessary to pass this training successfully. Most importantly, this training can be applied to any industry, such as virtual customers or patients, where AI avatar bots are used as part of an immersive and engaging learning experience. Different 3D ecosystems can be created to specifically meet the needs of businesses [24]. Using these 3D event platforms, companies can host and attend meetings, create breakout spaces, hold team-building sessions, participate in corporate partnership calls, and even create and promote webinars. Metaverse can host or connect to any web content, images, videos, and PDFs and have domains that connect in the same way that web pages are linked. Within the metaverse, the avatar serves as a personal staff member in a world where interaction with others is possible. The ergonomics of the environment reflect the office or space

where the event takes place or usually takes place. In short, Metaverse can work with or transform reality and everyday work practices [23]. Opportunities to work with simulated experiments without affecting the results of harmful reality experiments in education will increase the quality of education. In addition, the realism in the simulation environment will make the subjects easier to grasp and understand.

D. Metaverse Shopping Projects

There has been a significant transformation in almost all industrial sectors in recent years, especially in retail. The internet and smartphones have heavily influenced the retail industry. E-commerce sites are taking the place of physical stores, and now e-commerce is about to be gradually replaced by shopping via social networks. As the next step in this digitalization process, the metaverse offers businesses and consumers a future where individuals will live, work and shop in a virtual world. For example, it is planned to establish a metaverse store that is transformed into a 3-dimensional, virtual experience that reflects the physical world. A brand will have digitized products within this store that can be purchased by thousands of users worldwide. Users can shop with their avatars in this digital showcase and make their selections for home delivery. As a result, it is predicted that retail giants, regardless of the industry, will gradually transition towards the metaverse world in the next decade due to increased customer interaction and increased time spent on the relevant platform. This will increase the company's budget and resources devoted to entering their brands into the metaverse. Virtual fashion, avatars, and virtual real estate (housing, cars, etc.) will have their value in the metaverse. Companies will have to design brands for different people at different stages of the economic situation. People who invest in metadata may have their businesses and properties in the metaverse, so there may be opportunities to partner with companies that do not exist physically. Virtual fashion houses and designers will have the opportunity to enter an entirely new digital priority clothing market.

With Facebook changing its name to "Meta" and turning its vision to the development of metaverse projects, technology enthusiasts have started to explore this universe more. The same is true for crypto investors. After Facebook's announcement, local tokens of metaverse projects began to rise. Almost everyone is excited about this new concept, as it has been likened to the "future version of the Internet." Huang Renxun, CEO of Nvidia, one of the most influential people in science and technology, recently made statements about the metaverse at the Computex Virtual conference and said that he believes we are at the peak of the super universe and that he cares about the potential of the metaverse, and even in his speech that the metaverse has come to "simulate the future." It is known that in 2021, the word NFT (Non-Fungible Token) has been heard by many people, and the NFT frenzy has surrounded the whole world. [31]. It has made a big splash in the art and crypto worlds, especially after an artist named Beeple's NFT "Everyday's: The First 500 Days", the first fully digital artwork sold by Christie's, sold for \$69.3 million in March. This sale places Beeple, real name Mike Winkelmann, among the three most valuable living artists.

NFT has confirmed that a digital asset is unique and cannot be identical to each other, not interchangeable. Data is collected and stored in a digital gallery called a blockchain. Games, photos, music, cartoons, etc. All works can be arranged as NFTs within the scope of digital art. Holders have a digitally tracked hash code that can be followed, sold, and purchased digitally. So all content in the field of art, all television shows, simple avatars, etc., all digital content can be sold and bought. It would not be right to reduce the relationship between Metaverse and NFT to just a digital art gallery. The metaverse universe will be so vast and impressive that you can be whatever you want. The main appeal of the metaverse lies in its immersive experiences in style because the projection of affairs in the metaverse would be of immense value. Metaverse is a social revolution and an innovative model for NFTs. So NFT and Metaverse integration would naturally be appropriate. Metaverse will provide an excellent platform for NFTs to showcase. In summary, NFT will be the core infrastructure of Metaverse, and Metaverse will be the most prominent implementer of NFT [32].

II. ENTREPRENEURSHIP

The term entrepreneur comes from the French word "entreprendre" [33], meaning "to undertake." In the twentieth century, the entrepreneur began to be viewed as an innovator, and Schumpeter defined the entrepreneur; He described it as a reformist and revolutionary person who produces a new invention and a new good or produces an old one with a new method and creates new sources and outlets for products [34]. In another definition, an entrepreneur; is the person who innovates or develops, finds opportunities and transforms them into viable ideas, adds value to these ideas with effort, money, or skills over time takes the risks of the competitive market space to implement their ideas and turns their efforts into money [35], [36]. On the other hand, entrepreneurship is associated with the ability to have production factors, organization, and risk-taking characteristics to take advantage of the opportunities arising from environmental factors or produce economic goods or services to reveal new opportunities [37], [38]. In other words, it is a dynamically operated process for developing new products and building the future [39]. Entrepreneurship is a personality and motivation business and emerges in the cycle of achievement, risk-taking, and innovation. Entrepreneurs with high motivation for success make risky, innovative decisions in uncertain environments [40].

Today, the new generation entrepreneurship model is virtual entrepreneurship [41]. Virtual entrepreneurship, which has revolutionized businesses in the new world order, is a distinctive type of entrepreneurship as it develops new tools to facilitate the business processes of entrepreneurs [42]. Virtual entrepreneurship includes developing new digital technologies and creating new areas where these technologies can be used, starting new ventures, or digital transformation of existing businesses [43]. Some entrepreneurship can be realized with digital methods instead of traditional applications [44]. A virtual entrepreneur is a person who creates new business opportunities, can create new teams, has leadership characteristics, has a good understanding of software technology, can use digital tools well, wants to start his own business, produces creative ideas, and wants to sell

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the service and product on the internet. There are three different types [45]. *Light virtual entrepreneurship*; Internet technology, and digital tools are perceived and applied as complementary to traditional methods. *Medium virtual entrepreneurship*; businesses allocate significant funding to digital mechanisms for core products, product delivery, or other value chain components. *Extreme virtual entrepreneurship*; All processes and processes, from the production process of products and services to their delivery to customers, are digital.

III. ENTREPRENEURSHIP IN THE WORLD OF METAVERSE

Virtual worlds represent a new market with a diverse economy, and entrepreneurs seeking profitable opportunities are trying to take advantage of this new technology. In the metaverse world, all the necessary conditions for entrepreneurship exist; A new technology that provides new sources of income, an entrepreneur willing to invest money to increase his wealth, and a market with a well-understood economy. Entrepreneurs need to define the strategy they adapt well to succeed in various markets [46]. As a result, venture creation in virtual worlds may be relatively simple but opens up new possibilities in the future.

Entrepreneurship ideas through the virtual world were initially featured on the cover page of Business Week on May 1, 2006, as “virtual world, real money, a journey to a place where thousands of people live imaginary lives in cyberspace, and some even get along well” [47]. The European Commission [48], has emphasized that entrepreneurship is important because it contributes to job creation, growth, and competitiveness and unlocks personal potential [49]. Therefore, the development of the idea of entrepreneurship in virtual worlds is becoming increasingly important [46]. This situation brings to mind the following question: Is entrepreneurship an virtual or a real in the metaverse world?

The mobility in the entrepreneurial world is experiencing a remarkable rise with the introduction of 'new universes' such as the metaverse. After 2021, it is already thought that 2022 will double the previous year. In addition to new entrepreneurs, platforms also work very effectively. The new era of entrepreneurship will take place in a new universe beyond the physical universe, in the metaverse, with both the entrepreneur and the investor hat. With NFTs, the game world has taken its development to the next level. The basis of the metaverse is somewhat based on this game world. Generation Z lives in this metaverse world thanks to games [50]. All of these combined to form a new world. It has created its ecosystem, almost like a parallel to the physical universe. Metaverse creates a significant opportunity for entrepreneurs. Considered based on companies, a digital transformation has been entered. Many brands have the potential to be new growth areas for many products in this world. When the Covid-19 pandemic process is added to all these, the importance has gained a reputation [51]. The pandemic has caused our jobs, schools, and other services to rely on the digital world to keep running, and nearly everything has gone online. We attended classes and business meetings online with software applications, and we could run our business from home. Our lives were able to continue with the existence of social media and the internet.

For this reason, it is thought that the future lives of companies that cannot take part in the digital transformation trend will be complicated. Planning and initiatives can be made in many areas in the metaverse, from an advertising agency to make events. It is predicted that every business and enterprise's metaverse version and model will emerge. The critical thing about entrepreneurship here is acting early and creating a vision.

Many firms have started buying metaverse real estate in the hope of using it to engage with a new digital audience in the future. One of the leading companies in this regard is Prager Metis International LLC. It is a New York City firm. The firm has offices on three continents and has decided to participate in the Decentraland metaverse platform. Prager Metis' new meta office is exciting and full of potential, but that doesn't mean it's free. The firm paid a pretty \$35,000 fee for the three-story digital space. While not every investment is as big as Prager Metis's, it shows how significant assets can be made into the metaverse of severe businesses about the opportunity [3], [4].

A. Job Opportunities in Metaverse

On October 28, 2021, Meta hosted Connect 2021 from its internet video channel, describing the numerous possibilities of augmented and virtual reality. This video explains that different opportunities can be offered to all businesses, large or small, in about ten years [52]. As with the rapid changes in the digital age, the transition to the Metaverse world is approaching rapidly. Most users and investors have seen the economic return of the opportunities that emerged from desktop internet use to mobile internet. Information about the metaverse will be needed to capture the opportunities the metaverse world will bring. For this reason, individuals need to develop themselves and develop innovative thoughts to seize the upcoming opportunities by learning about the metaverse [13], [53].

1) Focusing on 2D Applications. Metaverse is the most significant opportunity for modern business since the advent of the internet. As the next evolution of digital platforms, it is thought to replace today's mobile internet. In the future, it is predicted that the primary way for people to experience the metaverse in the short term will be through 2D applications. It's crucial to focus on the skills you use today to help you grow the business with social media apps. During Connect, Meta highlights many potential use cases of how meta technologies will play a role in the Metaverse. There are several ways to imagine how 2D applications will lead to a more immersive experience in the future [54]: Commerce: With the rise of digital commerce, the metaverse opens up new opportunities for buyers and sellers to connect in a new way. For example, it becomes more immersive with the option to purchase physical or digital products from your store on Instagram. Entertainment: You could host a paid online event on Facebook today, but imagine if you could turn it into a mixed reality experience where people could attend in person or buy a ticket for the virtual experience. Two friends attending the concert held in Metaverse can enjoy the same concert. Thus, thanks to mixed reality, people are provided with a high level of interaction.

Metaverse allows you to visit other countries from your physical environment. The tourism industry benefits greatly from VR as it will enable people to explore any part of the world by wearing a headset. Before investing in expensive air and hotel packages, travellers can use the VR experience to decide whether visiting the destination is worth the planning and expense. Even people who have no intention of physically travelling the world can now participate in international virtual tours. Some people cannot travel due to health reasons or a limited entertainment budget. VR also provides useful experiences for people with disabilities who need to stay in a wheelchair. VR allows people with a heavy workload to travel. Virtual tourism helps eliminate monotonous patterns and gives a deeper perspective on geography and global issues. VR platforms include forms of entertainment such as virtual parks, galleries, museums and theatres. In recent years, the game industry has become even more popular with the closures at home during the pandemic. Metaverse makes gaming more innovative and challenging. Combining physical and digital objects, VR and augmented reality (AR) have become essential elements of modern gaming [55].

2) Enhance Physical World Experiences with Metaverse. In the Metaverse world, physical retail stores are modernised to be more digital. Over the past decade, thousands of retail stores in the United States have closed due to financial struggles. Shopping centres are partially closing due to the pandemic, and online shopping increases every year. VR is emerging as the solution to liven up retail stores as it provides technology that many consumers don't have at home. In addition, VR experiences speed up purchasing decisions as they can quickly answer many consumers' questions. One of the best ways to excite customers with virtual experiences is to develop a VR app that enhances the in-store experience. Interactive apps become reminders of local establishments and help build brand awareness. They're also useful for testing consumer acceptance of a product and can be the answer to the biggest small business challenge of increasing profits. Metaverse allows consumers to test products before purchasing. It will enable its customers to experience effects at real-site sales points using a headset with glasses that provides a 360-degree experience. This simulation will be able to give lots of details for the consumer to review. Every local marketing vendor should inform consumers about connecting products through VR engagement. "Try before you buy" strategy is proven to increase sales [56]. Traditionally, shoppers like to touch products before buying, using multi-sensory perception. In other words, people want to hold objects to feel the weight and texture. During the pandemic outbreak, shoppers were restricted from touching products and surfaces in retail stores. The solution to this problem has been virtual reality. Especially with the pandemic going on for the last year, we live in a hybrid world of online and offline [57]. From video calls to messaging, we need it more than ever. However, the metastore aims to simplify them with less friction and enhance their physical world experience. Current use cases of augmented reality, including Spark AR, are great examples of how metadata can meet the physical world. We've seen businesses use AR to allow customers to virtually drop furniture into their homes to see how it will fit or let people try on makeup or eyeglasses directly from their Facebook feed. Regardless of industry, there will be

metaverse use cases for businesses trying to leverage mixed reality and physical world experiences.

Metaverse also has many health benefits. It provides medical professionals with powerful insights about patients. Doctors are among the first professionals to test VR technology. At first, hospitals were hesitant to invest in this complex equipment, which seemed like an intense learning curve. Still, over time, VR technology provides doctors with rich patient data that was impossible to collect in the last century. A more comprehensive view of human anatomy is now used to assist doctors in performing surgery and rehabilitating patients. Modern medical equipment encompassing VR can scan a patient's internal organs to give a surgeon more detailed views than traditional X-rays. Thanks to the increased visibility of biological processes, doctors can diagnose health problems much earlier with VR. Doctors wearing VR glasses now have "X-ray vision" that helps them navigate complex surgeries involving the spine or brain [58].

In Metaverse, architects and engineers can easily showcase their designs. Architects use VR to communicate building design options to clients. Combined VR and AR solutions provide expectations with more intuitive architectural visualisation than traditional plans. For example, this form of panoramic visualisation works well with displaying spiral staircases and other artistic geometric structures [59]. Virtual tours by architects and engineers show the structures from every angle. It gives consumers a strong feeling that they are in the field, opening the doors and looking through the windows. Engineers can use VR to view highway and bridge projects viewed from the air by drones.

Metaverse makes education more enjoyable. The best learning conditions are found in a positive interactive environment provided by virtual experiences. Universities and career schools can use VR devices to make education fun and encourage students to delve deeper into a field. As in business education, VR demystifies complex course materials by simulating real-world experiences for college students [60]. Metaverse assists human resources in businesses with recruitment and training. Hiring talented and qualified people is a serious concern for certain companies, flooded with thousands of job applications piling up. VR makes interviewing candidates more seamless and provides staff orientation and training. Using augmented reality with VR allows hands-on training in the real world as workers can wear gloves and interact with virtual equipment. With these immersive experiences, learning curves are accelerated significantly, and complex systems are simplified to use. Because VR provides broad visibility, it makes it easier to locate system components, and complex equipment is now easier for technicians to learn. The automotive industry embraces VR technology as it works well with industrial automation [61]. One of the strengths of the metaverse is that it allows for remote collaboration using VR.

3) Building the Metaverse. Companies do not use the metaverse alone; Businesses will build to be a global partnership by creators, politicians and entrepreneurs [62]. Metaverse has been built from its inception with the framework and foundation of creating a new space where people can feel safe. Integrity, security and privacy will be

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weaved into the fabric, working with government officials, business operators and academics to consider issues and opportunities in the metaverse. The mobile internet has provided a new way to personalise experiences and meet people's growing expectations of how they want to interact with businesses. It is believed that the metaverse will drive this trend and that meta technologies will play an important role. The business opportunity will follow consumer behaviour in the Metaverse, as in the mobile internet. It's important to continue to build the business for today's options by innovating and experimenting with Facebook, Instagram, Messenger or WhatsApp while growing the audience, as connections made on these platforms will still be valid in the Metaverse [63]. The most successful brands in business history are developing and keeping up-to-date by understanding the changing needs of their customers. For example, you can enter the metaverse by creating new commerce channels on Facebook and Instagram or creating filters with "Spark AR Studio" [64]. Augmented reality ads can help customers understand the products from home.

Metaverse makes the promotion of new products more permanent. Entrepreneurs use VR to prototype, design and promote product launches. Previously the entire process was often too expensive and time-consuming for the average person to follow; VR paves the way for product developers to enter markets with a minimal upfront cost. It also provides a way for entrepreneurs to quickly create and test products to determine which products attract enough demand for mass production. This gives entrepreneurs the power to adjust and improve products based on real-time market feedback quickly. However, virtual experiences can be used to persuade investors to take risks and invest in a prototype or product.

B. Challenges for Entrepreneurship in the Metaverse World

Metaverse offers users the potential to earn fun experiences and even financial rewards. For businesses, the metaverse requires heavy investment and a shift in many forms of business. The payoff may be astronomical over time, but that doesn't change that most companies are now in a costly lead stage for the metaverse. Some of these concerns may fade over time, while other difficulties may arise. J. Wong, Ernst & Young's Global Chief Innovation Officer (2022), is aware of significant concerns about the metaverse but sees it as the inevitable next step in the technology world. He also points out that early adopters must be prepared to face cost, regulation, procurement, and security challenges in creating the metadata warehouse. For example, building financial infrastructure and new trading experiences create opportunities for fraud. Hackers are a threat at every turn. Identity theft is already a big enough problem in the real world. Managing its presence in the metaverse can be much more difficult because governance will be an essential issue. Jurisdiction can be complex as international companies only try to sign contracts and agreements in a digital space. This can lead to disagreements between various governments when resolving things like content control and legal rights. According to Wong (2022), none of these must be deal-breakers; they are just obstacles businesses must overcome.

It is tempting for a business to view the Metaverse as an excellent opportunity to make easy money. After all, you don't

need to lay a foundation for a building or rent a physical space. However, this does not mean that metadata storage will be a small investment. Conversely, while users may have free access, businesses may have a much higher "pay to play" threshold. The rapid growth of the cryptocurrency is making it very risky for many investors, but the metaverse announcement is thought only to perpetuate this chaotic but profitable situation. The Metaverse is a digital landscape, and the most natural form of currency would be a digital currency. Blockchain-based cryptocurrencies are ready to respond to this need with aplomb. Both the current digital tender and the numerous future iterations have the potential to be the driving engine behind financial interactions in the metadatabase [65]. As businesses prepare for the impact of the meta-universe, they must be open-minded and ready to adapt. Investing in digital real estate, embracing crypto, and brands must be flexible and controlled as they face visible and unforeseen challenges. If a company can do these things, it can avoid negative impacts and survive and prosper in the new digital age [5].

The metaverse is closely linked to the real world and corresponds to a real identity. The security and privacy of user data are the most significant real-world issues. With the emergence of the metaverse, the amount of personal data collected will be pretty substantial. Multiple companies will likely work together to create one or more metaverses in the future. Therefore, companies may need to make significant investments to ensure the privacy and security of the metaverse. In constructing next-generation networks, the metaverse must consider data privacy protection issues, just as in the previous network environment [66], [67].

IV. RESULT AND DISCUSSION

Activities such as creating and developing a new business, making innovations, acting flexible and dynamic, being creative and taking risks lie based on the entrepreneurship phenomenon. In real life, entrepreneurs earn income with their existing products and products and the services they offer to their customers. It has been seen that the entrepreneurs who are already present to continue their entrepreneurial activity in the metaverse world will evaluate the opportunities in this world and also make large investments to gain material and moral gain from the products and services they will offer for sale here. Characteristics are important for entrepreneurs to continue their lives successfully [68]. For this reason, they need to give importance to their individual and social attributes while continuing their entrepreneurial activities. On the other hand, it has been determined as a result of the examinations that the users who want to continue their entrepreneurial activities in the metaverse world should have knowledge and experience in design, computer hardware and software, and their entrepreneurial characteristics.

Types of entrepreneurship in real life; ownership, size, features and John Chicken model [69]. In the metaverse world, which is also called a virtual world, it is seen that the ownership dimension comes to the fore in terms of the products created by the users and the sales of the space they own. Looking at the real-life course of the entrepreneurial process, personal, sociological, organisational and environmental factors are examined under the headings of

innovation, triggering event, practice and development for entrepreneurs. Looking at the same situation from the metaverse world, it has been seen that real users who want to be entrepreneurs in the virtual world should first enter the metaverse and start to evaluate the entrepreneurship opportunities that exist in the metaverse world after examining the existing entrepreneurial activities.

Metaverse offers people an immersive 3D experience of not only human interactions but also products and services. In the metaverse, the possibilities for showing products, how tools or machines work, how clothes are for you, and how to experience museums and attractions are endless. Businesses will have opportunities to set up manufacturing centres in shopping malls and transportation hubs and provide high-accuracy professional 3D scans for customers' bodies to be templates for metaverse avatars [70]. With an avatar like this, you can perfectly match an outfit you like and see how you'll look when you're walking around. There are travel and movement restrictions in any global pandemic or quarantine. This issue should not be feared anymore because the metaverse ensures that many things we can do in normal life can now be done in this environment. Metaverse creates a virtual environment suitable for our preferences, where we can quickly realize business, entertainment, education, and travel opportunities. For example, it gives you the best alternative for your family holidays. You and your family may be skiing while talking in an Alpine region that rivals the Swiss Alps, and you could be displaced in seconds. Metaverse is also drastically changing the real estate industry and how real estate agents work. It offers an immersive 3D experience for property viewing and reviewing real estate development and renovation. This industry and many other industries can be plagued by capital, and human talent poured into their metaverse versions [71].

Although retail has transitioned to e-commerce before the global pandemic, a new transformation occurs with the metaverse. Virtual malls, stores and consumers can try virtual versions of physical products before purchasing them in the real world. This conversion can also be accomplished by selling and buying virtual goods with real-world currencies or cryptocurrencies. The effects of the metaverse can be quite high, especially in the changes in the games. It doesn't take much imagination to see how the game will change in marketing, branding and advertising [25]. Although the Metaverse started with the game industry, it can also change the game industry following its purpose. It is foreseen that this innovation will spread and change many other sectors. As Mark Zuckerberg noted, it is thought that in 5-10 years, Metaverse will become mainstream [72].

The pace of development of the Metaverse can be attributed to the impact of the Covid-19 pandemic on global society. With remote access services, mandatory changes were made in working hours in workplaces throughout the pandemic process. Even after the pandemic is over, most businesses continue to adopt flexible working models, including the ability to work remotely. Metaverse has a vital role in keeping employees connected to the organization while helping to overcome productivity problems related to remote working, such as video conferencing [73]–[75].

V. CONCLUSION

This study it is aimed to give information by examining the relevant literature on behalf of the difficulties and conveniences of entrepreneurship in the metaverse world and the opportunities it will provide to entrepreneurs. In this virtual world, where entrepreneurs will make their dreams come true, it is important to shed light on their future visions and guide them. Although not all of the foreseen problems are solved, minimising the effects that will arise is another goal of this study. Recent technological advances indicate readiness for the next wave of development, which is predicted to include the expansion of business applications and investments in the metaverse world [76]. While the metaverse world and the physical world move together, there are no movement restrictions and space limits in the virtual world. For this reason, it is possible to make designs and applications without borders in this digital environment where entrepreneurs will put their business ideas into practice. Thus, new business opportunities in the digital world for entrepreneurs are increasing day by day.

In the Metaverse world, the idea of entrepreneurship offers new business opportunities to many people today. Thinking that besides those who already have a business, people who do not have a company or industry can operate in the field of metaverse entrepreneurship, they are preparing for this new process. The main reason metaverse entrepreneurship has become popular is that there are many advantages of being an entrepreneur in the internet environment. This type of entrepreneurship, which easily closes the real differences between products and services and customers, provides an advantage beyond expectations in the market. Thanks to eliminating geographical barriers, a business environment can be established in any desired area. It's the easiest way to be a boss at your own business instead of being an hourly employee. One of the most interesting aspects is that the earning has no certain limitations. While working in any job for only a certain amount of salary, there is the advantage of making as much money as worked and served in the field of metaverse entrepreneurship. It is possible to determine the working hours by individuals and, if necessary, trade in the international arena. Metaverse also has many benefits in terms of marketing; It provides a map of possibilities, with a targeted emphasis on transparency, traceability, property rights, anti-fraud mechanisms, and trust and loyalty to consumers. NFTs may also be used to represent limited real or digital products [77]. Since limited availability makes it difficult for consumers to procure these products, some world brands (Gucci, Dolce Gabbana, etc.) provide convenience to consumers with NFTs. The combination of a luxury brand and NFTs becomes more applicable in the gaming world; For example, an avatar might wear Gucci shoes or a bag. By evaluating the popularity and demand of these digital products, a company can determine how much to produce accordingly. As brands learn more about the NFT production process, they can increase their advertising and marketing revenues by keeping a close eye on the latest technologies [78].

Although Metaverse entrepreneurship is a world of opportunities in all aspects, it has some difficulties and the advantages it provides. Especially to be successful in

metaverse entrepreneurship, it is necessary to work with perseverance and dedication. If entrepreneurs are not closely related to technology and do not know the digital world well, it will not be easy to achieve success. The competitive environment is more intense than normal, and it can be said that those who see opportunities take their place in this sector in the very early periods. For this reason, if entrepreneurs want to operate in the field of metaverse entrepreneurship, it will be necessary to say that their competitors are very large. At the same time, if the entrepreneurs do not have a unique business idea, it will not be easy for the people they will address to accept them in this field.

In this study, which examines entrepreneurship in the metaverse world, it has been seen that entrepreneurs who successfully carry out their entrepreneurial activities within the metaverse should be open to designer and technological innovations and their knowledge and abilities. For this reason, it is recommended to have good software and hardware knowledge for those who want to be successful entrepreneurs in the metaverse world. However, it should be noted that the business ideas they will use in this virtual universe are also effective and prestigious. Considering the popularity of Metaverse among young people, the target audience in the applications to be realised is mostly young people. For this reason, it should be noted that the needs and expectations of the young population should be well determined, and the initiatives should be directed towards them. It is predicted that the return of business ideas designed by entrepreneurs in the metaverse will be higher due to the costs in the real world. It is also recommended that entrepreneurs do an excellent feasibility study to implement their business ideas in the metaverse world. In this feasibility study, they should develop an alternative plan against the profit and loss calculations and the difficulties that may arise in the system. Since Metaverse is seen as a necessary technology for development, the state should encourage entrepreneurs in this field. Entrepreneurs should be supported with the required financial aid (grants, loans, etc.) to develop their projects. As the amount and value of data on entrepreneurs in the Metaverse increases, so does the need for security and reliability. Blockchain technology is critical to ensuring data security in the metaverse, and artificial intelligence is used to protect the diversity and richness of the metaverse. Entrepreneurs need to keep their data secure regarding the sustainability of their activities on the metaverse and therefore use the necessary industry 4.0 components.

Since Metaverse is a new field of study, studies on this subject are pioneering. With the increase in commercial activities in the metaverse, entrepreneurs need to have information about the metaverse and learn the concepts and theories. For future researchers, entrepreneurs' perception of the metaverse world is a subject that needs to be investigated. For this reason, it can be recommended to develop a scale to measure the perceptions of entrepreneurs. In addition, it is thought that qualitative studies (based on observation and interview) to be conducted with entrepreneurs on this subject will provide important information. It is recommended to carry out longitudinal studies that will determine the effectiveness of the entrepreneurs in the Metaverse in the process.

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