

FINANCIAL SERVICES IN THE METAVERSE

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ABSTRACT

Metaverse is a virtual world where people can meet, play, work, invest, and buy various products, such as houses, artwork, clothes, jewelry etc. In this virtual world, people interact with each other by using avatars, with their “magic” glasses. Metaverse combines artificial intelligence, augmented and extended reality, the Internet of Things, blockchain technology, edge computing etc. Gaming industries were the first ones that used the 3D space, followed by luxury brands (Nike, Gucci, Coca-Cola, Louis Vuitton), educational institutions, hotel chains (Hilton), IT companies (Facebook Horizon, Microsoft), banks (JP Morgan, HSBC) and others. Financial services are increasingly present in this virtual world. The purpose of this paper is to give an overview of the current situation regarding the use of the Metaverse, its advantages and disadvantages, as well as presenting future scenarios for the further development of this virtual world, especially for financial institutions.

KEYWORDS

Metaverse, financial institutions, financial services, 3D space, virtual reality.

JEL CLASSIFICATION CODES

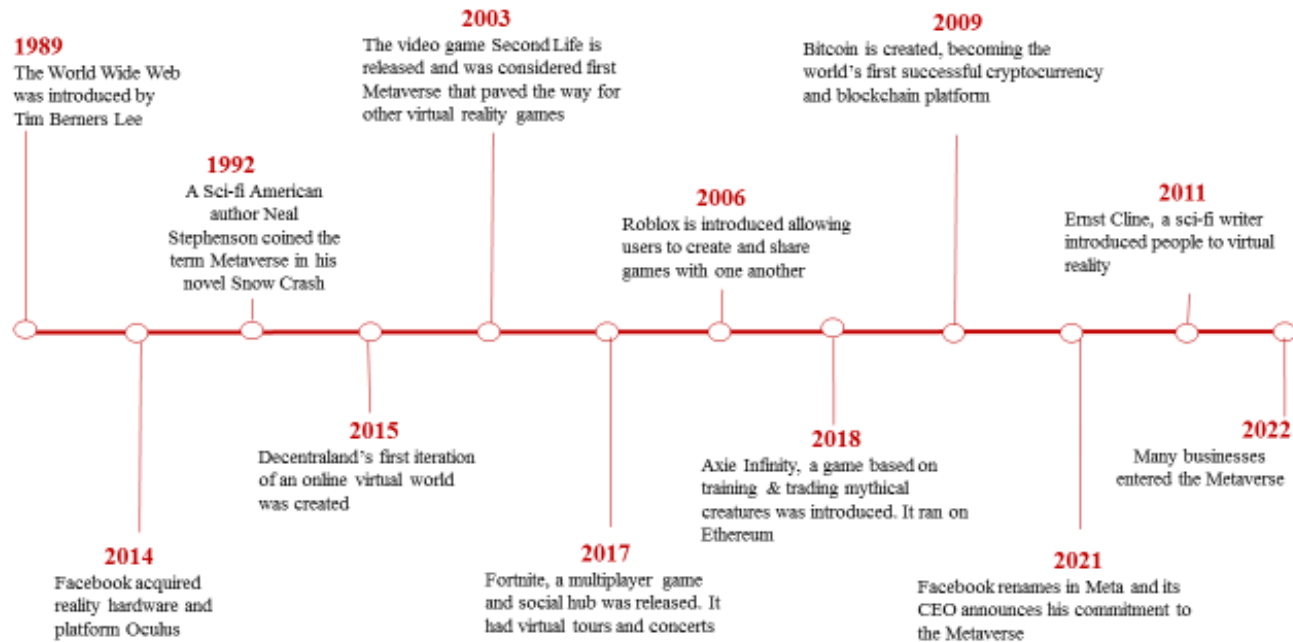
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1. INTRODUCTION

The American writer Neal Stephenson who coined the word “Metaverse” for the first time in 1992 in his fictional novel “Snow Crash”, could not believe that after 30 years it will become a reality. With time, a growing number of businesses joined this “second” world, parallel to the real one. Metaverse is a 3D virtual environment in which people, represented by avatars, can socialize, communicate, play, work, shop, travel, and do almost all the things of everyday life. The Metaverse is a post-reality universe, a perpetual and persistent multiuser environment merging physical reality with digital virtuality (Mystakidis, 2022). It is based on technologies that enable multisensory interactions with virtual environments, digital objects, and people. The term Metaverse was first used by the American author Neal Stephenson in his science fiction novel “Snow Crash” in 1992. He has never dreamed that this term would become very relevant in the 21st century. It was especially intensified in 2021 when Facebook CEO Mark Zuckerberg announced the rebranding of the company to Meta and a “new phase of interconnected virtual experiences using technologies like virtual and augmented reality”. However, for the Metaverse to appear, several prerequisites needed to be developed and implemented, such as the

development of several technologies (augmented/virtual reality, avatars, social media, simulation, artificial intelligence), the Internet development and even the isolation imposed by the worldwide Covid-19 pandemic. In this regard, the author Ng Kit Tsz (2022) will state that “technological advancements, in recent years, more innovative technologies such as artificial intelligence, blockchain, advanced mobile networks with 5G, and Internet of Things would force the appearance of the new virtual world Metaverse which is considered as an immersive, three-dimensional, virtual and multi-user online environment”. Thus, Metaverse has become a synonym for new technologies and innovations. The historical development of the Metaverse is shown in Figure 1 below.

Figure 1: The History of Metaverse



Source: Own research, 2023

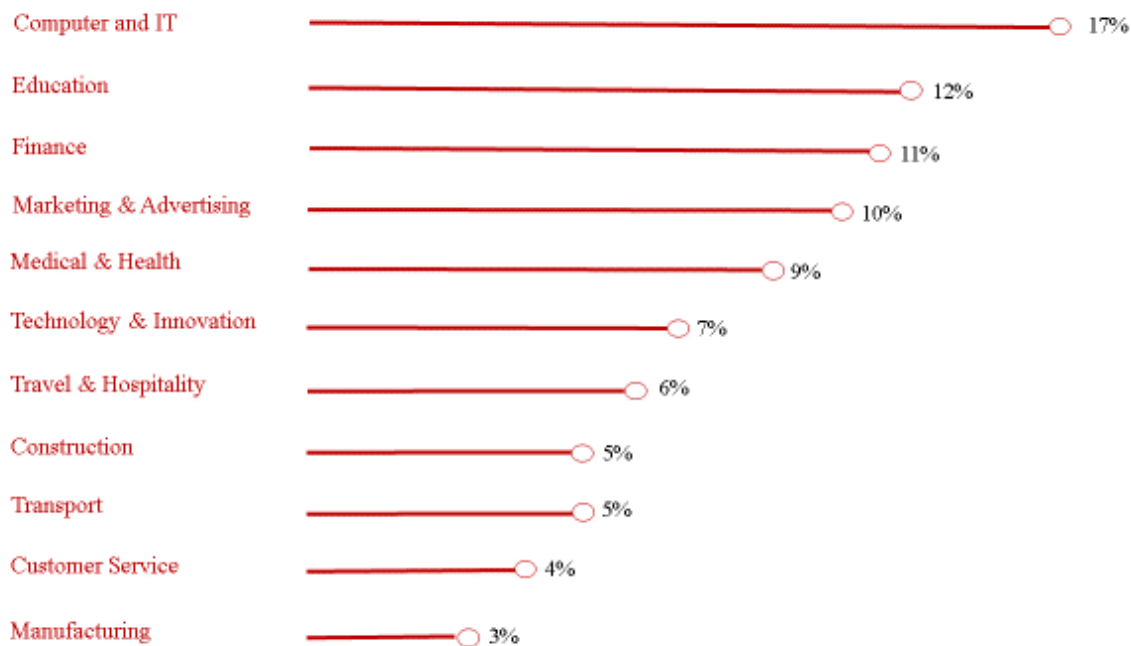
According to the historical development of the Metaverse, it can be noted that the pioneer in the use of this virtual world is the gaming industry. The gaming platforms, such as the Sandbox, Roblox, Decentraland, Fortnite, Minecraft are used for the participation of corporations, banks, financial and other institutions in the Metaverse.

As Ball wrote, one of the core attributes of the Metaverse is that it will be a fully functioning economy, where individuals, non-financial and financial entities will be able to create, own, invest, sell, and be rewarded for an incredibly wide range of work that produces value that is recognized by others. (Ball, 2020). If envisaged on this level, the metaverse economy will present a digital replica of the economy or a “twin” world, where individuals and businesses will make decisions for producing, selling, buying, owning, and investing in “value”. The existing circular flow diagram of the economy can be facsimiled in the new digital platform economy, where all digital businesses, individuals/avatars, would interact. Even though a virtual economy has already existed in individual games, where players could conduct transactions, such as trade virtual goods, or perform digital tasks in exchange for real money (cryptocurrency, e-money, fiat currency), the Metaverse is regarded as its upgrade into a fully functional economy.

According to the report by market researcher Newzoo, approximately 500 companies are present in the metaverse. (Takahashi, 2022). According to the same source, McKinsey announced that Metaverse could reach \$5 trillion in value by 2030. This data shows the impact that the Metaverse can have on a number of businesses in the coming years. The percentage share of individual businesses that invest in the Metaverse is presented in

the following figure:

Figure 2: Leading business sectors that have invested in the Metaverse, as of 2022



Source: Clement, J. (2022). Leading Business sectors already investing in the Metaverse as of March 2022, Statista, <https://www.statista.com/statistics/1302091/global-business-sectors-investing-in-the-metaverse/>

Available data shows that the finance sector is quite interested in participating in the metaverse. By the end of this decade, it is widely expected that about 50% of banks globally will be using AR/VR as an alternative channel for customer transactions as well as for employee engagement. (The Economic Times, 2022).

The purpose of this paper is to gain and present insights into the existence of financial services in the metaverse, the motives behind financial institutions' presence in the metaverse and the advantages and disadvantages that financial institutions incur from their presence in the virtual world. For the purpose of acquiring the goal of the research, this paper will answer the following research questions:

1. Which are the businesses already present in the metaverse?
2. What are the types of metaverse platforms based on the technology that they are built on?
3. How does the metaverse create a new economy that exists alongside the digital economy, by transforming businesses into existing industries?
4. Which are the financial services companies present in the metaverse?
5. What are the benefits and disadvantages of financial services companies in the metaverse?

These research questions will be answered with the help of using secondary data from journals, magazines, reports from agencies and companies investigating and investing in the metaverse. Additionally, academic papers and essays from the areas of digital transformation, digital economy, and decentralized finance are used. By using the deduction method, these data are used to derive conclusions and achieve the goal of this research paper.

2. LITERATURE REVIEW

2.1 Origin and Importance of Metaverse

According to Hackl, the word metaverse is a mixture of the prefix “meta” (meaning beyond) and “universe”.

(Hackl, 2021). However, considering that the Metaverse is a recent term that is still evolving, changing, and enriching, there is a wealth of its definitions. From the great number of definitions, the following ones are noted in this paper. According to the Oxford Learner's Dictionary, Metaverse is defined as a "virtual reality space in which users can interact with a computer-generated environment and with other users". The Metaverse is a 3D virtual space where a billion people live, work, shop, learn, and interact with each other from the comfort of their homes in the physical world (Tucci, 2023). It is the next development iteration of the Internet: a single, shared, immersive, persistent, 3D virtual space where humans experience life in ways they could not in the physical world. According to McKinsey & Co. the metaverse is just an evolution of today's Internet, that provides a convergence of digital technology that combines and expands the use of cryptocurrencies, artificial intelligence, augmented reality (AR), virtual reality (VR), spatial computing, etc. Some people believe that the metaverse is a digital playground for friends and others that it has the potential to be a commercial space for companies and consumers, and both thoughts are correct. (McKinsey, 2022). One of the simplest definitions of the metaverse is that of Majumder & Dutta (2023) according to which "the Metaverse is a network of immersive, shared virtual worlds that users can access to interact with other users, engage in conversations, work, learn and teach new skills, attend events, play games, shop virtual goods, purchase virtual real estate and do a lot more." According to the same source, the most basic elements of the metaverse are content and experiences, platforms, hardware and infrastructure, and enablers. The first element "content and experiences" comprises the content that is developed by creators and developers that enables experiences, as well as virtual worlds used in gathering, interacting, creating, and engaging in different activities. The second element "platforms" helps access to content, applications, and experiences. "Hardware and infrastructure" refers to the usage of semiconductors, cloud computing, networks, various devices (AR/VR headsets), accessories, and more. "Enablers", the last element helps in managing the digital identity, as well as the privacy, security and governance, monetization and payment in Metaverse.

The birth of the Metaverse coincides with the announcement of the rebranding of Facebook to Meta in October 2021 when plans were also announced to invest approximately \$10 billion in this concept in the same year. Immediately after this announcement, big tech giants like Microsoft, Nvidia, Google, and Apple started investing in the metaverse. The management consulting company McKinsey & Co. predicted that the metaverse economy will reach \$5 trillion by 2030. (McKinsey & Co., 2022). Also, according to the Council of the European Union, it has been estimated that by 2026, 25% of the population will spend at least one hour a day in the Metaverse for work, shopping, education, social interaction, and entertainment. E-commerce and gaming are expected to be the dominant engine, and entertainment, education, finance, and marketing are also becoming important sectors.

In the future, Metaverse is expected to develop into an extremely large-scale, exceptionally open and dynamically optimized ecosystem, which will provide unlimited, interconnected virtual communities in which people can socialize, collaborate, and have fun in real time, using virtual reality headsets, augmented reality glasses, smartphone applications, and other technologies. The metaverse is a significant vast ecosystem of online applications with endless potential and objectives in which the physical and digital worlds coexist and seriously affect fundamental areas of daily life. Many investors and businesses are attracted to the metaverse because of the growth seen in new technologies, innovation, digital discoveries, and high profit margins.

2.2 Companies in the Metaverse: Why and how do they transform themselves or others?

The term metaverse does not refer to the existence of one or a single platform, but different companies might build their own metaverse using different technologies, offering different experiences to their users. Currently, there are 154 virtual worlds globally (either live or in the development stage) with a total of 606.4 million monthly active users (Metaversed, 2020). According to the same source, the majority of monthly active users are present on Web 2.0 type of metaverse (more than 98%) accessible through a web browser or an application, and more than 86% belong to the age categories of kids and teenagers while 8,8% are older users. This type of metaverse is centralized and the creator of the metaverse platform makes decisions, reinforces rules, and controls. End users in this type of metaverse cannot gain ownership of the digital assets they buy or create in the virtual world. Examples of such metaverses are Roblox, Fortnite, Minecraft, VRChat, Horizon, Green Park,

and more.

On the other hand, the Web 3.0 type of metaverse is decentralized and built on blockchain technology, which means that a community of users are governing it, by stipulating and reinforcing the rules of conduct. Due to these features, in Web 3.0 metaverse platforms, users can purchase, gain ownership over digital assets, sell or trade them, which is more desirable on behalf of users. Decentraland, Sandbox and Axie Infinity are examples of the most popular types of Metaverse 3.0, where the designed blockchain enables streamlining of the process of smart contracts involving virtual property and other digital assets. However, the number of monthly active users in this type of metaverse is less than 2% (see Figure 3). Taking into consideration the large user base of Web 2.0 metaverse platforms and the disruptors that are built on blockchain technology, BigTech companies from this segment initiated the insertion of blockchain into their interfaces and started appropriating the distinguishing features of Web 3.0, such as decentralization, ownership, and self-governance, transitioning to Web 2.5.

Figure 3: Metaverse platforms by type

VW Type	Browser/ VR	Type	Q1 21	Q2 21	Q3 21	Q4 21	Q1 22	Q2 22	Q3 22	Q4 22	Q1 23	Q2 23	Q3 23	Q4 23
Web2	Browser/ App	Kids/ Tweens	305	315	320	325	330	350	405	435	450	454	479	519
		Older Users	14	15	18	20	29	35	38	42	45	46	49	53
	Virtual Worlds in VR	Rooms	4	4.5	5.5	6	6.5	7.5	7	8	9	9	9.3	21.6
		Worlds	2	2.25	2.5	2.75	3	3	3.25	3.5	4	3.5	3.5	4
Web2 Total (m)			325.0	336.8	346.0	353.8	368.5	395.5	453.3	488.5	508.0	512.5	540.8	597.6
Web3	Virtual Worlds in VR	Ethereum	0	0	0	0.25	0.25	0.5	0.5	1	1	1	1	1
		Non-Ethereum	0	0	0	0	0	0	0.25	0.25	0.5	0.5	0.5	0.5
	Browser/ App	Ethereum	1.5	2.5	2.75	3	3.5	3.75	3	3.5	4	4.25	4.8	5.0
		Non-Ethereum	0.25	0.25	0.25	0.5	0.75	0.75	1	1.25	1.5	1.75	2	2.25
Web3 Total (m)			1.8	2.8	3.0	3.8	4.5	5.0	4.8	6.0	7.0	7.5	8.3	8.8
Grand Total (m)			326.8	339.5	349.0	357.5	373.0	400.5	458.0	494.5	515.0	520.0	549.0	606.4

Source: Mohammed, I. (October, 2023) More Than 600 Million People Use The Metaverse Every Month <https://www.beyondgames.biz/42994/more-than-600-million-people-use-the-metaverse-every-month/>

Furthermore, the metaverse platforms are disturbing many industrial sectors, such as retail, entertainment, education, healthcare, and many more, while at the same time, they need support and resources from other sectors. In other words, as previously stated, the metaverse at its most developed level would mean a fully integrated economy, that could be worth 8 trillion dollars (Goldman Sachs, 2022) and this growth would be within the digital economy. For this economy to be functional it requires infrastructure for transacting as in the physical world. Therefore, there are many companies that are supporting and investing in the metaverse in the context of providing identities, avatars, social networking, user interfaces, marketplaces, NFT/blockchain developers services, crypto and digital wallets, payments, clouds and hosting, artificial intelligence etc. The BigTech companies, i.e., tech giants from the non-financial sector that invest in the Metaverse, but not limited to, are Alibaba Group Holding Limited, Google, Meta, Microsoft, NVIDIA, Epic Games, and Animoca Brands. Given that in the new digital platform economy BigTechs are leading the radical changes in the establishment of new business models and are pacing towards spreading their business portfolio in different industry and service sectors, it is natural to assume that they are the leading companies in the metaverse, in terms of investing in metaverse and/or building metaverse platforms.

Metaverse platforms hinge on the great potential to transform how organizations interact with customers, for example in the **education** area where students and educators have new virtual learning spaces. Metaverse will further improve the online education that will be accessible to everyone, irrespective of their physical location. This new virtual reality would increase engagement, interaction, and collaboration among students, and the

possibility of studying through real life experiences.

In the **entertainment industry**, games, concerts, shows, and sports are already offered in metaverses. Gaming platforms like Roblox, and Fortnite have already experimented with concerts of avatar artists performing for avatars' users. In the sporting events, the Australian Open made the first big step in the Metaverse, where it offered its fans non-fungible tokens, with which the buyer received a small plot on the tournament main field, physical ball, and/or NFT video clip if the winning shot occurs on their virtual plot. The greatest advantage for the entertainment industry present in the metaverse is selling an unlimited number of tickets and large attendance from anywhere in the world.

In the **retail sector**, customers in the metaverse, by using augmented reality, can virtually try digital copies of products, additionally without waiting in queues in wardrobes, for example. However, this is only one small part of the retail opportunities. In the metaverse, many brands like Nike, H&M, Adidas, Gucci exist, which enable digital avatars to purchase their goods in the form of NFTs.

In the context of the **real estate** sector, metaverse with blockchain technology allows for purchasing virtual real estate in the metaverse on behalf of individuals and businesses. For example, purchasing virtual real estate in Sandbox right next to Snoop Dog virtual property costs someone 450.000 USD, i.e., 71.000 SAND (tokens of Sandbox). Many companies purchase virtual real estate properties to be virtually present in the metaverse and have the possibility of increasing the number of customers and revenue streams.

The financial sector is also building its presence in the metaverse. Generation Z and Alpha are financial institutions' future clients, and these generations are digitally native, they have been growing up with games, educating themselves on PCs or tablets. Living through the COVID-19 pandemic, they attended online lectures, online proms, and different events. These generations see the Metaverse as something that is natural to them. They are still in Web 2.0 metaverses, without blockchain technology inserted, but when they become financially independent, they would move themselves to Metaverse 2.5 and even higher on Metaverse 3.0. This opens the metaverse market for retail banking, wealth management, and insurance companies. Therefore, banks, like HSBC, JP Morgan Chase, Siam Commercial Bank are already present in different metaverses, with one main goal to achieve, to be perceived from digital native generations as pioneers in advancing technologies and indirectly to increase their customer base and what is more, talent management pool.

2.3

Financial services' presence in the Metaverse

Large digital finance platforms are already transforming the **financial services sector**. Embroidered financial services into digital platforms are already present which transform how banking, wealth management, and insurance companies operate. The development of the Banking-as-a-service model clearly explains how banks and their services evolved towards the new digital platform economy. Furthermore, financial institutions around the world acquire tech companies, partner with them, or through joint ventures and strategic alliances create digital solutions and offer them in the digital economy. Nevertheless, even though financial institutions are following the trends and responding to the new entrants from the Fintech Era 3.0, they lack human interaction. Digital tools and services are customers based on their preferences and behaviors, but do not watch closely the direct interaction with clients, their incentives, alternatives, etc. Metaverse fills in this gap and offers a worthier customer experience by upgrading their online presence.

According to Banking Hub (October, 2022) and the empirical evidence related to existing financial institutions in the metaverse (see **Error! Reference source not found.**), financial institutions currently are focusing on establishing their presence in the Metaverse, connecting with new clients, and offering client support to new and existing customers. In this respect, financial institutions, and more specifically banking financial institutions, are (re)building relations with them by educating and informing them on cryptocurrencies, exchange rates, stock prices, institutions' research projects, sustainability, banking services, etc. While digital and mobile banking was intended to dislocate customers from brick-and-mortar branches and enable them 24/7 banking services outside banks' premises, banking in the Metaverse, tries once again to reestablish relations with customers with the one-to-one approach in the virtual world.

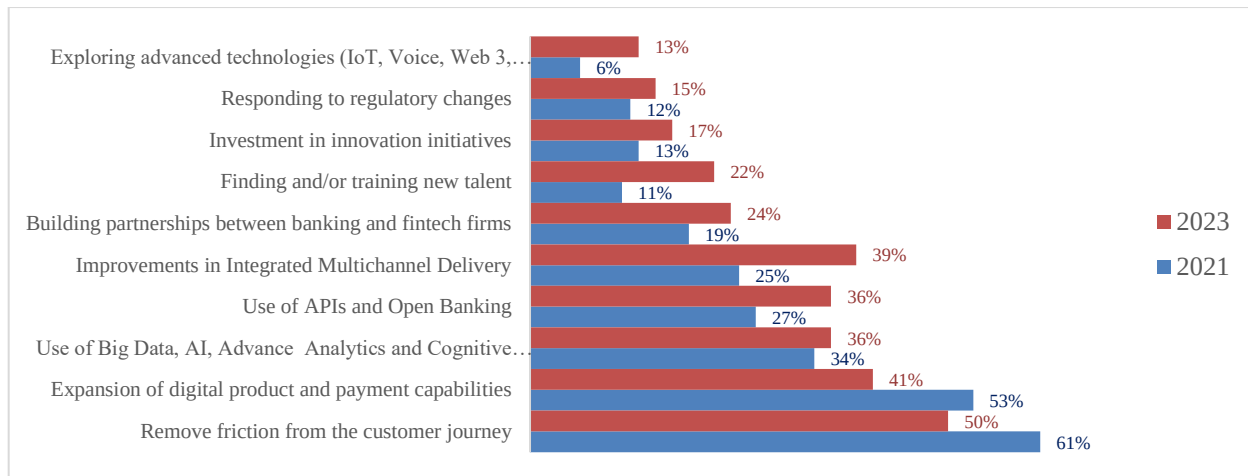
Figure 4: Examples of financial institutions present in the metaverse

Financial Institution	Association with the Metaverse platform	Metaverse platform Presence	Planned/Enabled activities
HSBC	Partnership	Sandbox	Building LAND for engaging and connecting with sports, e-sports, and gaming enthusiasts.
		Virtual World in VR	Payment of bills
JP Morgan Chase		Decentraland	Virtual branch - Informative about bank's-initiated projects
Standard Chartered Bank (Hong Kong)	Partnership	Sandbox	Virtual branch - Experimenting with and creating new experiences for clients.
Bank of America		Virtual World in VR	Employee training
Kookmin Bank		Virtual World in VR	Banking activities, training, and education of young people and employees in finance
DBS	Partnership	Sandbox	Interactive experiences for the promotion of a sustainable world
Toronto Dominion Bank		Virtual World in VR	Cooperation and internship training
Royal Bank of Canada	Partnership	Roblox	Educate children and teens about finance
Fidelity Investments	Partnership	Decentraland	Offering interactive experiences to new generations of investors to allow them to learn more about investing, the metaverse, and Fidelity Metaverse ETF (FMET) (KPMG, 2022)
CaixaBank	Partnership	ImaginLand - Decentraland	Offering experiences in culture, creativity, and technology
Sokin		Own metaverse community	Offer of sporting to fashion brands, where consumers would be able to meet, communicate, transact, invest, and make purchases. (England, 2022)

Source: Our own research

According to the current view of financial institutions (Profinch, 2022), in terms of whether customers will use augmented (AR) and virtual reality (VR) for conducting transactions results are that 9% of interviewed believe that customers will never use AR/VR for conducting transactions, 13% believe that this will occur by 2025, 34% believe that it will occur by 2030 and 44% from financial leaders believe that customers will use AR and VR after 2030. Additionally, according to Digital Banking Report (2023), the top trends in the retail banking sector projected in 2023 compared to trends from 2021 as shown in Figure 5, highlight that retail banks will maintain their customer centric behavior, and their focus on the expansion of digital products and payment capabilities since the new trends are focusing on removing obstacles from the consumer banking experience. It is clear that financial institutions have understood customer desires and the unique experience that they have to provide. Financial institutions can no longer have the usual simple mobile applications or web pages for their services, instead, their approach should be more customer centric, trying to have personalized and humanized digital experiences when making offers and building interfaces. According to MIT Sloan Management Review (2022): “Although focusing on making shopping online faster or simpler for customers is important, brands must also take an experiential approach by building new ways to interact with customers on a human level. It’s this focus — digital humanization — that separates truly revolutionary brands from those just trying to get by.”

Figure 5: Top trends in retail banking projected in 2023 vs. 2021



Source: Digital Banking Report (January, 2023). *Retail Banking Trends and Priorities 2023*. Financial Brand. <https://thefinancialbrand.com/news/banking-trends-strategies/top-10-retail-banking-trends-and-priorities-predictions-2023-157672/>

An exceptional percentage increase in trends is noted in the part of usage of Big Data, AI, advance analytics and cognitive computing, APIs and open banking, improvements in integrated multichannel delivery, investment in innovation initiatives, exploring advanced technologies (IoT, voice, Web 3, metaverse). Appropriately, their focus will also be on building partnerships between banking and fintech firms and responses to regulatory changes. Banks, and financial institutions in general, are partnering with tech startups or tech giants to create innovative digital products, or what is more banks or non-banks financial institutions create their own digital platforms, and metaverses for providing unique experiences from multiple areas (not only financial services) to their users.

The data of all performed reports confirm that financial institutions are well aware of the potential of the Metaverse, but on the other hand, they are “waiting in the lounge in the Metaverse” for regulator changes and a lot of digital norms need to be established and implemented, for securing privacy and customer identity (KYC – know your customer), safety of customers assets and from frauds and thefts, and finally for the ability of fiat currencies to be able to interact on blockchain networks (for the purpose of purchasing NFTs). (Liquin & Dogan, 2022). With full embracement of the metaverse on behalf of financial institutions, they enter a new level of metafinance, or of finance in the metaverse. Metafinance as a term refers to the provision of financial services for virtual worlds, including the financing of virtual real estate and other virtual assets as well as the transfer of funds between traditional bank accounts and the Metaverse (Banking Hub, 2022).

2.4 Advantages and Disadvantages for Financial Service Companies Brought by the Metaverse

Fintech era 2.0 was the turning point for financial institutions in terms of introducing electronic services, but at the same time, this era provided a solid base for tech companies to start entering the financial market. The global financial crisis in 2008 gave birth to cryptocurrencies and the introduction of blockchain technology which had the largest impact on finance, i.e., the creation of decentralized finance brought a risk that the need for intermediaries will be erased (Ernst&Young, 2023). New entrants in the financial sector, for example, tech startups or fintech focused on customers and changed their organizational and/or personal requests from financial institutions. Their business model based on excellent service, customer loyalty, data gathering and analysis, and building networks of capital enabled new entrants to eliminate the size, market share, and concentration as main obstacles for entry into the financial market. From 2008, many digital banking and non-banking financial institutions have emerged, such as Robinhood (2013) – brokerage; Bondora (2008) – investments; PayPal (2008) – payment platform; crowdfunding platforms – Indiegogo (2008). Considering that markets believed these newcomers, it was clear that they were going to be the fastest developing segment,

leaving traditional banks with decreased profits. According to the projections by McKinsey and Company (December 2022), the return on equity by banks is projected to fall below 7.2 percent. This means that banks should adapt to the changes in the economy and transform their business model to ensure future profitability.

Metaverse enables incumbent banking and non-banking financial institutions, along with tech, fintech, techfin and BigTech companies, to lead innovation, and to be proactive creators of the future of finances instead of a follower. The advantages that metaverse has for financial institutions are:

- Considering that the gaming industry is currently larger than the movie industry (Mordor Intelligence, 2023), financial institutions by building their presence on gaming platforms can be perceived by new generations as proactive, and innovative companies.
- Variety of ways in which customers can interact with financial institutions, i.e., Metaverse, VR, AR, and physical office. In the banking industry, when customers were asked “What is the brand/experience you want your branches to be known for” (Digital Banking Report, 2022), 42% answered that it is the Omnichannel availability, i.e., banking on your own terms, while 21% answered that their bank should be known for the easiness of use, 17% that is the most accessible bank, 14% that the bank addresses customers’ complex needs and 6% answered that the bank is tech savvy bank. Nearly 50% of respondents want to have customized services and support and that the company is a digital and tech savvy bank.
- Enabling financial institutions to learn by identifying the latest developments in cryptocurrencies. Cryptocurrencies are important from this point of view since they are used for facilitating commerce and exchange within the Metaverse. Examples of Metaverse platforms that have their own cryptocurrency are: Sandbox (SAND) with 804 million USD market Cap, while Decentraland has MANA with 712 million USD market Cap (Forbes Advisor, 2023).
- Improving customer experiences through the delivery of 3D virtual reality for conducting transactions, advisory services, and training of employees, which indirectly translates into improved services.
- Improving customer engagement. Metaverse enables customers to have one-on-one experience, to offer users tailored made products and services, and/or to engage them on different journeys (i.e. in areas different than financial).
- Gaining a competitive advantage.
- Collaboration. In the platform economy, collaborations are the most valuable matter. Financial institutions are already partnering with new entrants (fintechs or third party providers) to bring best practices and experiences to the metaverse market. According to Digital Banking Report (2023), in 2023, partnerships between financial institutions and fintech have increased by 9pp. from 2021 being 51% to 60% in 2023.
- Metaverse has been affecting the financial service sector, particularly the banking sector and the capital markets, since the time when Diners card or ATM was introduced (and this was the simplest type of financial technology.) In that sense, metaverse and blockchain technology allow users to own digital assets, which on the other hand require advice from financial institutions’ financial and/or investment advisors in the Metaverse. Furthermore, financial institutions are preparing their financial advisors and wealth managers for Web3-based financial products, such as Metaverse index funds, ETFs and digital assets or NFTs. (CoinDEsk, 2023)
- Finally, Metaverse, enables financial institutions to establish new markets and develop new products and services.

Companies from the finance sector, currently are only focused on benefiting from the advantages of establishing new and maintaining relationships with new and existing customers. Due to the characteristics of Web 2.0 metaverse platforms, financial services cannot be fully implemented. However, the transitioning of metaverse platforms towards Web 2.5 and Web 3.0, by inserting and/or building on blockchain technology, opens the virtual market for pure financial services as we know it in the real world. Metaverse and DeFi (decentralized finance) offer excellent opportunities for financial institutions, and if these settings are not considered, they can create great threats to their existence.

Related to the disadvantages of financial institutions entering the metaverse, they can be translated into risks posed to banks, insurance companies, and investment banks, that mostly come from unregulated ownership rights and obligations. Disadvantages for financial institutions include aspects from:

- Regulation and safety. Metaverse 2.5 and 3.0 allow users to purchase land, accessories, avatars, etc. with the currency required in the metaverse platforms. However, due to still poor regulation in this area, there is a greater probability of fraud, and theft of NFTs, i.e., digital assets. The question is how to regulate and authenticate the use and monetization of data. (Banking Hub, 2022)
- Privacy. Cyber hacks and threats might jeopardize customers' identity and privacy.
- Security/malware. Virtual reality and metaverse increase the risk of privacy breaches not only for financial institutions' customers but and for them, as sellers and creators.
- Technological software obstacles. Due to the lack of authentication methods and the technological obstacles, it is mainly the use cases in marketing and education, as well as client support that seem realistic.
- Technological hardware obstacles. Losses of network, or electricity could mean financial loss for the customers leading to reduced confidence in the financial sector.
- Employees physical health. Employees engaged in the metaverse can suffer from headaches, and loss of their sight due to the usage of VR/AR lenses, and they might lose contact with reality from too much involvement in the metaverse.
- Volatility of cryptocurrencies. Cryptocurrencies, used in Metaverse platforms, by definition are volatile, and their value is determined by the number of users that a Metaverse platform has.

If Metaverse is employed in full sense, it would mean that in this twin world, banks would conduct their banking activities, insurance companies would offer insurance policies, investment funds, and other financial intermediaries would provide digital financial instruments, i.e., it would mean that financial institutions have overcome the obstacles for full embracement of virtual reality.

With the previous discussion and analysis of the pros and cons of metaverse for financial institutions, it can be noted that the path towards this new platform economy will not happen overnight, i.e., this is a work in progress development that asks for a joint effort from all the stakeholders in the economy. Not only financial institutions should be well aware of the opportunities and threats that come in this twin world, but also the companies of the non-financial sector.

3. CONCLUSION

Throughout the historical journey of the development of the financial system, one thing remained certain, that the financial system is the main pillar of one economy. Moreover, if one economy is moving towards its digitalization, or if there is a creation of a new platform economy that would exist in parallel with the physical economy, the establishment of a new and digital financial infrastructure is inevitable. Metaverse is gathering companies from different sectors, i.e. health, education, real estate, marketing and many more, like the physical world, and starts reflecting a new economy that is growing rapidly.

Financial institutions around the world, especially in the USA, and China are embracing the Metaverse and establishing their presence in different Metaverse platforms or building their own Metaverses, virtual rooms/worlds. This enables financial institutions to exploit and experiment with new approaches and methods of building relationships with Generation Z and Alpha customers.

In parallel, they are building interoperability with private forms of money and expanding their reach towards decentralized metaverse platforms and decentralized metaverse finance.

Even though their offers in the Metaverse platforms are only at the educating, informing, and client support level, metaverse still offers many benefits, opportunities and drawbacks to financial companies. The new entrants are already disrupting and taking portion of their share in the financial landscape, but the move is on the financial institutions to provide the necessary financial knowledge, regulatory and macroprudential policy, the creation of responsible and sustainable investment, financial and credit policy in the metaverse platform economy, and to lead the innovation in the finance sector.

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