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WILL NFTS BE THE BEST DIGITAL ASSET FOR THE METAVERSE?

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ABSTRACT

The purpose of the current research is to explore the concept of non-fungible tokens created by blockchain technology and its applicability in the Metaverse. Metaverse is a hypothesized and an iteration of the real world. Metaverse is not a new concept. The concept itself has appeared in the 1990s and some of the online games tried to realize the Metaverse world (e.g., Second Life and Cyworld). Nowadays, Metaverse becomes feasible under the circumstances supported by technologies, including virtual reality, augmented reality, cloud computing, Internet-of-Things, 5G, and Big Data. In Metaverse, there is no doubt that residents in Metaverse may trade or transact assets or goods with one another. Our research tries to tie the concept of non-fungible tokens in Metaverse as the best digital asset to secure the originality of the goods in Metaverse. Detailed discussions are made in the following sections.

Keywords

Metaverse, non-fungible tokens, blockchain.

INTRODUCTION

In the past years, assets were something we could use our five senses to validate. Those times have gone. We are now in a new era. Some may call this an “Advance Dot Com” era, but we are actually in an era of digital assets. CPAs and other accounting professionals now have the job of defining and documenting the existence and ownership of digital assets. Bitcoins and Ethereum are some of the most well-known digital asset platforms. Are there any other changes on the horizon? Yes, we are being thrust, blasted off or launched into preparing for the Metaverse where there may be a need for digital assets. What is the Metaverse? Metaverse may be a new online experience, a social media platform or 3-D virtual world. Metaverse is the hypothesized world and an iteration of the real world. The term *Metaverse* was first introduced by author Neal Stephenson in 1992 in his novel *Snow Crash* and some of the online games and social media services tried to realize the Metaverse world (e.g., Second Life and CyWorld) in early 2000s. However, at the time of the emerging Metaverse in the online game world, its functionalities were very limited due to a lack of technologies to mimic the real world. However, the concept of Metaverse is no longer ideal or infeasible nowadays. There are advanced information technologies that enable fulfilling people’s desire of sensing or recognizing the real world from the gate of the Metaverse. Such technologies include virtual reality, augmented reality, cloud computing, Internet-of-Things, 5G, and Big Data. Supported by such high technologies, a set of virtual spaces facilitates the fact that people can meet other people who are physically distanced over the world.

Again, Metaverse is another world that is a repetition of the real world. The society we live in has been created and developed by the action of give-and-take. The exchange of wealth has been the main driver of civilizations and today’s highly advanced industrialized / commercialized world. Therefore, it is reasonable to assume the existence of trading or transactions of goods or assets among Metaverse residents or visitors. For instance, a buyer in Metaverse may sell his or her digital arts or digital song to other Metaverse visitors or residence. Then, we are in a waiting pattern to see what it will be because right now it doesn’t exist: will digital assets be needed to exist or function within the Metaverse? Digital assets seemed to have arrived out of nowhere and seemed to be part of our future. With the recent announcement of Facebook making the announcement to change its name to Meta and their CEO investing heavily into the Metaverse, one must think a change is coming. The future of our reality may exist in the Metaverse which digital assets would be secure and most likely used. The purpose of our study is to explore the concept of digital assets and their applicability in the Metaverse. In particular, our research emphasizes the use of non-fungible tokens (NFT) in Metaverse, which is beyond consideration of the current cryptocurrency.

The following sections reviewed the concept of digital assets, non-fungible tokens, and applicability and current status of using non-fungible tokens in Metaverse. Discussions and Limitations are followed.

LITERATURE REVIEW

Digital Assets

A lot of changes of thought have occurred during the Covid-19 Pandemic. Essential workers, people getting paid for what they are worth, massive resignations of the U.S. workforce and digital assets seemed to be part of this change. In a survey by Deloitte's 2020 Blockchain Survey, approximately 94% of banking and capital markets executives believe digital assets will be important, at least for the next 3 years (Walker 2020). So, what is a digital asset? Assets are generally thought of in three classes: currencies, commodities, and securities. Now, we have the rapid emergence of digital assets. Digital assets are nothing more than a digital representation of ownership of something. How does something gain value if it is in the digital world or the internet? Digital assets come in the form of cryptocurrencies, which store the value as traditional currencies, tokens, which have unique features on dispersed platforms, or digitized securities, which could be representative of digitized money or physical assets.

Now, Bitcoin and Ethereum are some of the largest digital asset management platforms. Such digital asset management platforms have their own technology to authenticate and document their digital assets. Blockchain is the technology the digital asset companies use. Blockchain was a technology used to digitally timestamp a document while maintaining the privacy of the document (Cohen 2021). Today, in simple terms, Blockchain is a digitally distributed, decentralized ledger that exists across a network and is public. So, multiple networks can see the asset or information across networks, and if any changes occur it is added to the end of the ledger and can be seen by all. Hence, it is a chain of information but maintains all parts of its integrity.

Financial institutions, CPAs, corporate infrastructures, and retail organizations are now preparing for how to navigate the new phenomenon of digital assets. Auditing digital assets could pose an issue for numerous reasons. First, with each asset management platform using their own developed blockchain cause the auditor to have to assess the security and reliability of the blockchain. Secondly, the auditor would need to have the skillset to access and understand blockchain. Thirdly, the process and control of the transactions occur quickly and the ability to acknowledge and follow the custody of the asset will pose issues.

"Traditional assets under custody at the top 15 custody banks globally exceeds the US \$130tn. In comparison, the total value of outstanding digital assets in Dec 2020 was approaching US \$1tn" (Walker, 2020). Due to the location (digitally) of the digital assets, financial institutions, countries, and governments have been changing regulations to be able to handle these assets. Digital asset custody is one of the trickier aspects. Digital asset custodians are classified into three categories: self-custody, custody at a digital exchange, and custody at a traditional bank or institution. Self-custody involves the keeping of private keys (like a password or identifier) in an online environment or a location or device not connected to the internet. Custody at a digital exchange is the transfer of the private keys to alternate digital storage outside of the original blockchain and a separate set of private keys may be issued to the owner. Lastly, custody at a traditional bank or institution consists of the storage of the private keys to a device or storage unit also not connected to the internet. Europe is developing the MiCA regulations (Markets in Crypto-Assets) to deal with the custody, transferability, and evaluation with all blockchain-based assets (Sander, 2021).

Along with creating new regulations, digital assets at some institutions are starting to be based on real estate. Digital assets would allow various investors in real estate who may not have the ability to invest in real estate before due to lack of capital. Diversity in investing could reach different individuals who may be located throughout the world to invest in other economies due to digital assets.

Non Fungible Tokens

Bitcoin was one of the digital assets to gain early popularity. Bitcoin's Blockchain seemed to be easier to follow during the beginning of the digital asset era. Bitcoin allowed for the creation of digital assets and the ability to transfer them without the normal "middleman", i.e., financial institutions. Ethereum has now emerged as one of the big digital asset management companies. Ethereum has introduced 'non-fungible tokens' or NFTs as a new digital asset. What are non-fungible tokens? Are NFTs a digital asset or a new art form? So, traditionally a fungible asset has value and can easily be interchanged, like money. An example of this is \$1.00 U.S. You could exchange the \$1 bill for 4 quarters or 10 dimes. You would still have one dollar worth of money. An NFT is a cryptographically unique digital token used to prove ownership of something. An NFT marks the ownership of the original digital artwork, digital picture, or digital asset and cannot be easily interchanged because

there is only one original. Bitcoins are fungible tokens and can be interchanged. The concept of NFTs is still arguing. It is a digital artwork that has been previously shared a million times and can be reproduced but there is still one original so that makes it valuable. As Kuglar (2021) says, NFTs are changing the landscape of the art world by opening up new way of thinking about asset ownership. Some digital memes and artwork have sold for millions of dollars. The CEO of Twitter recently sold the first-ever tweet for \$2.5 million dollars. Due to blockchain technology, the original can be tracked, and the ownership of the original can be transferred. At times the original owner or artist can maintain rights to gain from future sales of the NFTs. Some look at NFTs as buying “official collectibles” like trading cards (BBC News 2021). Observing the launch of NFT-based digital card games such as *Doctor Who: World Apart*, Murray (2021) also claims that NFTs are ideal for digital trading card games. Another term used for the ownership of NFTs is smart contracts maintained by blockchain technology. NFTs trading volume hit \$10.67 billion in Q3 2021, an increase of 700% from the previous quarter (Kramer 2021). Some of the well-known NFTs are CryptoKitties, NBA Top Shot and Chloe Clem are gaining popularity daily. The artwork by Beeple may be the most well-known NFT because it sold for \$69 million dollars.

Now, when talking about if NFTs are secure, the discussion always leads back to blockchain technology and the security of the private keys. Physical access to the custodial holding institution or device should be restricted to authorized personnel. Security and regular checkups should be part of the security process of handling digital asset access. As the wallet software is advancing, there are scenarios where the security of this software is in question. One scenario would be the owner of the NFTs loses the private key. The loss of the private key could occur by a laptop or smartphone gets lost or stolen or ransomware. To recover the private keys or prove ownership, the blockchain itself may have to be altered which goes against the general principle of blockchain technology. Another scenario causing concern for the security of NFTs is that one of the parties of the ‘smart contract’ does not complete their end of the transaction. “Transaction reversion is a form of blockchain rollback or the process of returning the blockchain to an earlier version or state” (Martins 2021). “*Recoverable Token: Recovering from Intrusions against Digital Assets in Ethereum*” (Martin 2021), discusses the possibility of recovering or blockchain rollback without disturbing its fundamental properties. Tokens in this scenario were recovered but the software had to be written for a specific blockchain version. Blockchains are not universal.

Hackers always pose a threat. Back in March 2021, compromised numerous user accounts on Nifty Gateway NFT and transferred previously purchased NFTs. The users were able to recover the cash value. The hackers were able to sell the NFTs to a different platform which made the original private keys associated with Nifty Gateway obsolete. Email scams are another threat to NFTs or cryptocurrencies by fooling the recipient to open their accounts in lieu of a security risk. Malware and access trojans will always be a security risk when you are dealing with the internet and machines with internet access.

Outside of trusting NFTs and keeping your private key secure, can you always trust the blockchain platforms? Users have been scammed by fake crypto apps and websites (Feghali 2021). Users buy things online all the time and become too trusting in websites or apps. Many of these fake apps and websites are immediately shut down once users report not receiving what they purchased but the damage is done. With the possibility of fake websites, there is also the possibility of buying fake NFTs. “Someone bought a fake Banksy NFT for \$445K US (Feghali 2021). Hackers have been known to sell fake certificates of ownership. Users must verify they are on a trusted site that has verified certificates of ownership.

NFTs In The Metaverse

3, 2, 1... blast off to a virtual world with augmented reality with unlimited possibilities. The Metaverse is bringing new opportunities to companies, creators, artists, and video gamers. It will allow more users the opportunity to exist within the internet or virtual world much like how NFTs have allowed diverse users to invest in new areas (Tan 2021). The Metaverse could possibly exist within the internet or replace it. Once again, much like NFTs, the Metaverse can be built by using blockchain technologies and decentralized applications. How will cryptocurrencies exist within the Metaverse? In Tan’s article, “*A Crypto Guide to the Metaverse*”, state companies have already developed virtual worlds where users can use cryptocurrencies to gamble in virtual casinos or use in theme parks. Decentraland is one of those companies where a user can own their characters, accrue game items, and purchase virtual land. At the time of the article, a 259-parcel virtual estate sold for more than \$900,000 U.S., the largest of its kind. Tan (2021) also believes it will be possible to buy and sell virtual goods within different games and used them on interoperable marketplaces. To do this, cryptocurrencies, like NFTs will have to be used.

Game industry is one of the areas where NFTs can create values for both developers and users. In the process of game playing, users can create or obtain a unique item and may want to exchange them. However, in the traditional item exchanging system, there are various risks such as fraud, duplicate, missing, and unfair reward. NFTs could be a good solution for those issues. Yosuke Matsuda, the president of Square Enix, a Japanese entertainment conglomerate, recently expressed his company’s

enthusiasm for the NFT as a part of its future portfolio (Robinson, 2022). Epic Games, one of the big players in video game developing and publishing industry, also confirms its interest in blockchain and NFTs (Batchelor, 2021). As many games provide users a virtual world-like experience, which is similar to Metaverse, it is worth to see how game industry adopt NFTs as a part of its ecosystem. Fowler and Pirker (2021) suggest potentials of NFTs in the various contexts of games including tokenfication, crypto-assets and collectibles, consumer-created content, blockchain-based games, and proof-of-stake in games although there are some challenges. Furthermore, Choi et al., (2021) empirically show that games developed using the NFT-based in-game items could differentiate the game eco-system in the market as well as provide customer benefits.

NFTs have been mainly used to show ownership for art collectibles, in-game assets, and getting ready for the Metaverse. Now blockchain developers are looking at other ways to monetize NFTs, one of those ways is in virtual horse racing. A news program on WBOC in October talked about a Metaverse NFT Horse-Racing game. The racing game is called “MetaRace.” Designers will be allowed to use blockchain to build NFT parts for mechanic horses to be built for races. “The NFT horses will be divided into six parts such as the Engine, Front leg (drive) gear, Rear leg (drive) gear, Horsehead, Electronic reins, and Horseshoe” (WBOC) (see Figure 1). The parts are interchangeable, and users will be able to build their horses by trading or purchasing the NFT parts.

Another example of NFTs being used in a virtual world is the ZED RUN horse racing platform. In the ZED RUN platform, NFTs are used to buy, sell, and breed digital racehorses and then enter them in races (Hackl, 2021). Some of the horses are worth up to \$36,000 U.S. At the time of the article, there were over 100,000 global users. These races are starting to pick up sponsors and advertisers. Stella Artois, who is part of the Budweiser Brewing Group, has partnered with ZED RUN. In this partnership, Stella Artois has created unique horse breeds with complete theme skins and 3-D racetracks. NFTs and the Metaverse is upon us.



Figure 1. MetaRace NFT Horse Design.

DISCUSSION

Are NFTs and other digital assets secure to use in the Metaverse? The main issue with security outside of the usual hackers, the possibility of losing the private keys or them being stolen. There is no universal blockchain platform. As stated earlier, each digital asset platform has its own blockchain technology. Currently, there are over hundreds of thousands of digital asset companies. According to The CPA Journal, there are various companies monitoring digital asset services and collectibles like “7000 (CoinGecko.com), 9,800 (CoinMarketCap.com), and 270,000 other coins and tokens (Cryptosheets.com)” (Cohen 2021). With this number of platforms continuously growing, institutions and governments developing laws for protection and taxations changing, where does the responsibility of these types of assets being a secure lie.

Now, let’s discuss the process of whether a hacker is involved or if the private key is lost or stolen. In the research paper by Martins (2020), “*Recoverable Token: Recovering from Intrusions against Digital Assets in Ethereum*”, they discussed their proposal on how to handle these situations and the possibility for blockchain rollback. The paper discussed this rollback in the

contents of the rollback with specific versions within Ethereum. If we start to look at this with regards to the Metaverse, which would be built on various blockchain platforms from numerous other platforms, would these platforms be able to communicate, and all be able to be rolled back to correct these or other issues. For NFTs and the Metaverse to coexist as of right now, it would seem there would need to be a major collaboration by each blockchain platform.

Practically, NFTs in Metaverse can be an excellent digital asset to secure the originality of artifacts. Since Metaverse can be either newly created virtual worlds or a replicated real life, there would be chances to duplicate genuine items or assets in Metaverse. Thus, securing originality would be key to maintaining the sustainability of Metaverse, even security becomes more important if residents in Metaverse trade digital assets using a form of cryptocurrencies.

LIMITATION AND FUTURE RESEARCH

Our study tries to explore the applicability of NFTs in the Metaverse. Because there are still ongoing technological advances applied to industry practices. Thus, our research project needs to keep tracking NFTs technological applicability to Metaverse and its feasibility through interviewing or contacting associated parties and entities in both NFTs and Metaverse industry. On the other hand, our study focuses only on the use of NFTs in Metaverse in commercial contexts. However, there are also many potentials of NFTs in non-commercial contexts, such as education or social activities. Future studies can look at the possibility of use of NFTs in such areas, too.

CONCLUSION

The adolescent young man in me is excited about the possibility of the Metaverse. Movies like ‘Tron’, ‘Jumanji – Welcome to the Jungle’, and ‘Ready Player One’ and TV shows like ‘Alter Egos’ seemed to be preparing us for some type of alternate universe, an alternate way of living, or the Metaverse. The Metaverse is an easier concept to accept versus NFTs. I can totally see NFTs being used in the Metaverse. Are NFTs secure enough for the Metaverse? Right now, there is still speculation on what the Metaverse is or is not. By the time the Metaverse is live and running, the security issues of NFTs may be a thing of the past. The future looks bright, but it is being built by one blockchain at a time.

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