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TRANSFORMATION FROM WEB2 TO WEB3; NON-FUNGIBLE TOKENS IN MARKETING

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ABSTRACT

This thesis examines the evolution of blockchain, the rise of NFTs, their use in marketing, their brief but transformative presence in the Metaverse, examples from global brands, the transition from Web 2 to the emerging Web 3, the principles of Web 3, and the complex interconnections between these elements. The relationship between Web 3 and NFTs (non-fungible tokens), which have become a focal point of the digital economy, is worthy of examination. This examination include an investigation of the implications for individuals and organizations, as well as strategies for navigating the rapid evolution of this technology. In my work I also used the method of frame analysis, as well as the study of examples through the prism of McLuhan's tetrads.

Key words: Web2, Web3, Non-Fungible Tokens, Brands campaigns, McLuhan's tetrads.

ÖZET

Bu tez, blok zinciri (blockchain) kavramının gelişimini, NFT'lerin yükselişini, pazarlama alanındaki kullanımlarını, sanal evren (Metaverse) içindeki kısa ama dönüştürücü varlıklarını, global markaların bu alanlardaki örnekleri, Web 2'den oluşmakta olan Web 3'e geçişi ve bu unsurlar arasındaki karmaşık bağlantıları incelemektedir. Web 3 ile NFT (Değiştirilemeyen tokenler) kavramları arasındaki ilişki, dijital ekonominin tam ortasında olup incelemeye değer niteliktedir. Bu çalışmada da hızla evrimleşmekte olan bu teknolojinin nasıl kullanılacağına dair stratejilere ek olarak bireyler ve kurumlar için etkileri araştırılmıştır. Çalışmamda çerçeve analizi yöntemi kullanılmış ve Mcluhan'ın dörtlüsü eksenınde örneklere bakılmıştır.

Anahtar Sözcükler: Web2, Web3, Değiştirilemeyen Tokenler, Markaların kampanlayarı, McLuhan’ın tetradları.

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1. INTRODUCTION

In the contemporary era, all phenomena are constituted by data, and information is of considerable value. The challenge that cognitive society is confronted with is the management and control of data. A significant proportion of data is transient and publicly accessible. Digital files are ubiquitous and intended for replication, dissemination, and distribution.

Non-fungible token (NFT) technology represents a potential solution to this problem, offering creators of digital works the opportunity to "tokenize" their intellectual property and subsequently dispose of it in the form of a physical object (Borisov & Pobedkin, 2023).

During 2020 and 2021, the number of projects using blockchain technology has increased. The high payback of many cryptocurrencies has led to a sharp increase in their popularity, and with it the number of projects implementing blockchain technologies.

One of the most successful blockchain-based projects of 2021 is the Nonfungible Token (NFT) technology. NFC technology has already transformed the domain of digital art, offering a potential solution to the challenge of monetizing digital creations. It has also enabled the owners of tokenized art objects to assert their presence in the digital art realm and, in some cases, to amass considerable wealth from the sale of their crypto artworks (Emmaja, 2022). The NFT is currently one of the fastest-growing areas of interest within the art world. This is largely attributable to the combination of novelty, the integration with cryptocurrency, and disruptive technologies, as well as the unpredictable and impressive sums commanded by such items at auction and on trading platforms.

The significance of this work is derived from the advancements in digital art trends. Over the past two decades, there has been a notable proliferation of digital technology across nearly all facets of daily life. This has led to the assumption that all art media formats will eventually be absorbed into the digital environment, either through digitization or the use of computers in a particular processing or production aspect. It is evident that an increasing number of artists are engaging with a diverse range of media, employing digital technology as a tool to create elements of their art, including painting, drawing, sculpture, photography, and video.

The distinctive feature of this work is its attempt to ascertain the role of NFT technology in the contemporary world. The objective of this study is to ascertain the reasons behind the rapid expansion of the NFT bubble and its subsequent decline, to identify potential correlations, and to propose alternative forms of digital assets that could replace the NFT.

In the course of composing this work, the following research methods were employed: analysis and synthesis, classification, visualization, market research, and theoretical inquiry. The theoretical foundation of the study, on the other hand, was the existing literature on the metaverse, NFTs, and the work of prominent scholars such as Daniel Goleman's "Demystifying Non Fungible Tokens (NFTs)," which elucidates the principles of NAT, the characteristics of marketplaces, and the role of NFTs in the contemporary era. Additionally, the study drew upon the insights of Erkan Sakas' articles published in 2022 and Kirillov V.

THE AIM OF THE WORK

It is imperative that two specific provisions be upheld and defended. The initial benefit of blockchain technology is that it has facilitated the creation and protection of digital art, transactions, sales, collectibles, and numerous other interactions in novel ways. The other is the rapid expansion of the bubble around the NFT, which is now beginning to deflate. It is therefore necessary to identify potential replacements.

The structure of the work is as follows: it comprises an introduction, two chapters, a conclusion, a list of references, and an appendix. The introduction presents the rationale, focus, and intended outcomes of the research, elucidating its theoretical and practical significance. The initial chapter addresses the transition from Web 2 to Web 3, evaluating their respective strengths and weaknesses, and delving into the theoretical aspects of blockchain and NFT technologies, as well as cryptocurrency. The analysis of the NFT rank is presented, with reference to foreign examples. The second chapter presents the practical component of the final qualification work, offering The text presents illustrative examples and examines the topic through the lens of relevant theories.

In the course of this research, an effort was made to study and systematize the information pertinent to the purpose of the work. The objective was to gain proficiency in undertaking individual projects and to develop practical expertise in the area of cryptocurrency and digital contemporary art.

Given the relative novelty of this field of research, there is a paucity of existing works and writings. It is thus the objective of this thesis to address this gap. Additionally, my self-reflexivity with regard to the research process is informed by my previous work experience. Also, this thesis addresses my experience working for a private company that specialized in NFT products and software application development. Despite the relatively brief duration of my tenure, I was able to gain insight into the rapid evolution of the metaverse and the challenges associated with staying abreast of its developments and trends.

1. TECHNOLOGY AND DIGITAL MEDIA/DIGITAL MARKETING

This chapter aims to present an overview of the fundamental concepts associated with Web 2, including its definition, utilization, and the factors that led to its eventual replacement by Web 3.

Following an extended period of contemplation regarding the optimal structure for this paper, it became evident that it is crucial to acknowledge the rapid pace of change in our contemporary world. This shift can often be challenging to fully grasp. Until recently, we inhabited the Web 2 world. Now, it is time to adapt to the Web 3 world. This transition may be challenging, but I will endeavor to motivate you that it is not as challenging as you may perceive.

1.1. Web 2.0

The Internet, which is currently a ubiquitous phenomenon, is commonly referred to as "Web 2.0." It is largely controlled by businesses that offer services in exchange for consumers' personal data. The concept of Web 2.0 encompasses social networking, web-oriented architecture, and feature-rich online applications. This pertains to modifications in the creation and utilization of web pages by users, irrespective of any alterations made to technological requirements.

The advent of Web 2.0 has had a profound impact on the marketing industry, particularly in the realms of digital marketing and social media marketing. The term "Web 2.0" is used to describe the evolution of the Internet from a static, one-way platform to a dynamic, interactive platform that allows users to create and share content (Wix Studio, 2023). One such consequence is the influence of Web 2.0 on marketing, exemplified by the advent of social media platforms such as Facebook, Twitter, and Instagram. These platforms have transformed the manner in which businesses can connect with and engage their target audiences. The use of social media allows businesses to engage in dialogue with their customers, which can result in enhanced brand awareness, increased customer loyalty, and an improvement in sales.

Furthermore, the advances in Web 2.0 has facilitated the proliferation of user-generated content, including product reviews, blog posts, and videos. Such content can serve as an efficacious marketing instrument for businesses, as it is frequently perceived as more authentic and reliable than conventional advertising. To illustrate, contemporary social media users are frequently presented with a multitude of advertisements, which often capture their attention. A considerable number of brands engage in collaborative efforts with influencers, which often result in heightened levels of interest and excitement surrounding the product in question. The advent of Web 2.0 has facilitated the creation and dissemination of content by businesses through the use of blogs, social media, and other online platforms.

Nevertheless, it is worth questioning whether the use of social media for advertising purposes a sound strategy is. The responses of customers to advertisements on social media can vary considerably, contingent on a number of factors, including the nature of the advertisement, the platform on which it is displayed, the age of the customer, and their individual preferences and behaviors. Many customers may choose to ignore advertisements, scrolling past them without paying much attention. Alternatively, they may be interested in the content and click through to learn more or make a purchase.

The efficacy of an advertisement is contingent upon its ability to elicit a desired response from the customer. In some instances, the presence of an advertisement may prompt customers to engage with it by leaving a comment, clicking on the Like button, or sharing the content. Conversely, customers may experience irritation or even anger if they perceive the advertisement to be intrusive or irrelevant. Furthermore, customers may exhibit skepticism when presented with an advertisement, particularly if it appears implausible or deceptive (Wix Studio, 2023).

Social media influencers are able to generate considerable income, and the practice of "blogging" is experiencing a period of rapid growth. The question thus arises as to the identity of these influencers and bloggers, as well as the manner in which they come to be. In essence, an influencer is an individual who exerts a significant influence on the choices and purchasing decisions of others due to their authority, expertise, position, or relationship with their audience. Collaboration with prominent brands and e-commerce platforms can result in financial gain.

The question thus arises as to the precise manner in which they generate revenue. There are numerous ways in which influencers can monetize their social media presence. For instance, Leung, F.F., Gu, F.F., Li, Y., Zhang J.Z., and Palmatier, R.W. (2022) identify the following as potential avenues for generating income:

Sponsored content: Influencers may engage in collaborative efforts with brands, whereby they create sponsored posts or videos that feature the brand's products or services. In return for their promotional activities, which may encompass a single post or an ongoing collaboration, the brand remunerates the influencer.

Affiliate marketing: Influencers may utilize their social media platforms to advertise goods and services and receive compensation when a consumer makes a purchase via their unique affiliate link. It is common practice to combine sponsored content with this method.

Paid partnerships: Influencers may engage in collaborative endeavors with brands for the purpose of developing and implementing marketing initiatives over an extended period of time. These endeavors may entail the creation of content, participation in events, or the development of products for the brand, in exchange for a negotiated fee.

Product promotion: Influencers are able to create their own products, such as clothing or beauty products, and subsequently disseminate information about these products via social media.

Ad revenue: Individuals with a considerable number of followers on social media platforms have the potential to generate income through the placement of advertisements on their respective social media channels.

It is important to acknowledge the existence of regulations pertaining to sponsored content and advertising on social media. These regulations stipulate that influencers are obliged to disclose any paid partnerships or advertising to their followers. Many individuals believe that this is an effortless method of generating income, traveling, and connecting with new individuals. Consequently, they have amassed a considerable audience, which has led to a high demand for similar work opportunities. However, it is not as straightforward as it may appear. For example, initiating a new venture is inherently challenging, and many individuals are apprehensive about the potential response from their followers on social media, which can often be harsh.

Many individuals tend to view this type of activity with skepticism and superficiality, failing to recognize the significant and time-consuming responsibilities associated with content creation. It is a considerable investment of time for those engaged in this activity, which is a full-fledged occupation with the usual hourly schedule.

In regard to Web 2.0, it is a rapidly evolving and user-friendly type of Internet evaluation. The applications are generally user-friendly and require minimal technical knowledge, making them accessible to a wider range of users. The following will discuss the advantages and disadvantages of Web 2.0. One of the key advantages of Web 2.0 is its interactivity. The Web 2.0 paradigm enables users to engage with websites in a more active and participatory manner, thereby fostering a more engaging and dynamic online experience. The subsequent point is that of user-generated content. The Web 2.0 paradigm enables users to generate and disseminate content, thereby facilitating greater diversity and creativity on the Internet. It is also important to consider the role of social networking. The advent of Web 2.0 has facilitated the growth of social networking sites, which have become a conduit for individuals to connect and communicate with one another across geographical boundaries. Finally, the phenomenon of collaboration. The advent of Web 2.0 has facilitated collaboration on projects and the sharing of information, thereby engendering greater innovation and productivity (Yasar, K., 2023).

It is reasonable to conclude that Web 2.0 has both advantages and disadvantages. The primary disadvantage is the potential for security risks and privacy concerns. The advent of Web 2.0 has given rise to novel security concerns, including identity theft, phishing, and malware attacks. Additionally, it has prompted significant debate surrounding the issue of privacy. In addition to these concerns, there are also implications for mental and psychological health. The reliance on technology and the phenomenon of information overload are two further issues that require consideration. The advent of Web 2.0 has precipitated a surge in reliance on technology, which has the potential to exert a deleterious impact on our physical and mental well-being. Furthermore, another problematic aspect is the prevalence of bias and misinformation. Furthermore, the advent of Web 2.0 has facilitated the dissemination of misinformation, as erroneous narratives can rapidly proliferate on social media and other digital platforms.

Nevertheless, in light of the advantages offered by Web 2.0, it is pertinent to inquire as to why humanity requires new technologies and the advent of Web 3.0. In the beginning, the world develops daily. Inevitably, a new phenomenon emerges to supersede the preceding order, regardless of the extent of habituation or convenience. Secondly, Web 3.0 is expected to offer enhanced convenience and reliability compared to its predecessor.

1.2. Web 3.0

The progress of Web 3.0 is transforming the manner in which individuals and corporations interact, with values and principles assuming a more prominent role (Blog, 2022). The core principles of Web 3.0 can be distilled into two key concepts: decentralization and digital economies. These concepts enable the valuation of content created on the internet, which is a defining feature of Web 3.0.

In the context of Web3, the term refers to decentralized applications that are executed on the blockchain (Wix Studio, 2023). Naturally, any replacement will possess the majority of the enhanced characteristics. It can be conceptualized as the next evolutionary stage of the Internet, based on distributed ownership of protocols, artificial intelligence, decentralized peer-to-peer networks, and the creator economy. Information and value can be owned and transferred thanks to Web 3. For example, Web3 is significantly faster in performance than Web2, and it is also considerably more cost-effective. The advent of Web3 has led to the emergence of a vast ecosystem of monetization opportunities for creators and communities, characterized by innovative models that prioritize people's needs and experiences.

The term "Web 3" is used to describe the third era of the Internet. This era is distinguished by the prevalence of decentralized protocols, blockchain technology, and a vision of a more open, transparent, and user-centric Internet. As with any technological change, Web 3 presents a number of benefits and challenges.

The advantages of Web 3 are readily apparent, with decentralization being a primary tenet. A primary tenet of Web 3 is decentralization, which entails the distribution of control and ownership of data and assets across a network of nodes (Blog, 2022). This has the effect of reducing dependence on central authorities and increasing security. The subsequent point is data ownership. In Web 3, users have greater control over their data. Blockchain and decentralized identity solutions afford individuals the ability to manage their personal data autonomously, determining who has access to it and under what conditions. Additionally, it is an interoperable system. The objective of Web 3 is to facilitate interoperability between disparate applications and platforms. This implies that users are able to interact with a variety of services in an uninterrupted and integrated manner, without being constrained by the limitations of a particular ecosystem. Similarly, smart contracts are employed in a similar manner. The Web 3 platform employs smart contract technology, which refers to self-executing contracts wherein the stipulations of the agreement are inscribed directly into the code. This enables the automation and streamlining of numerous processes, thereby reducing the necessity for intermediaries. Finally, we consider tokenization. The tokenization of assets is facilitated by Web 3, which also enables the representation of both physical and digital assets on the blockchain. This creates new opportunities for fractional ownership and the efficient transfer of value.

Nevertheless, it would be remiss not to consider the potential disadvantages of Web 3. Do these persist as significant issues that warrant attention? The primary challenge lies in scalability. A significant challenge for many existing blockchain networks is their inability to process a substantial volume of transactions in a short period of time, a limitation commonly referred to as scalability. This can result in prolonged transaction times and elevated transaction fees. It is, of course, challenging to adapt to new developments. The usability of Web 3 applications may present a challenge for non-technical users (Wix Studio, 2023). For some, the management of private keys, comprehension of blockchain concepts, and interaction with decentralized applications may present a significant challenge. The evolution of Web 3 technologies has introduced uncertainty regarding the regulatory framework for cryptocurrencies, tokens, and decentralized applications, which may impede their acceptance. However, Web3 is confronted with an energy consumption challenge, as numerous blockchain networks, including Ethereum and Bitcoin, rely on energy-intensive consensus techniques such as Proof of Work. This has prompted inquiries into the potential environmental impact of blockchain technology. Security issues: Although the blockchain itself is regarded as secure, vulnerabilities in smart contracts and the possibility of 51% attacks on smaller networks may present security risks.

1.3 Difference Between Web 2.0 & Web 3.0

In his 2023 publication, Evan Karnoupakis identifies four key characteristics of Web 2.0, also known as the social web, namely, interoperability, user-generated content, usability, and participatory culture. This period is typified by platforms such as Facebook, Twitter, and YouTube, where the creation and sharing of material is centered within corporate-owned servers. This raises issues related to data ownership, censorship, and privacy (O'Reilly, 2023).

In his article, Gavin Wood posits that blockchain technology is employed by Web3, also designated as the semantic web, with the objective of decentralizing the Internet. The objective of this iteration of the World Wide Web is to provide users with the ability to exercise ownership over their digital assets and data. The salient features of Web3 are its trustless transactions, decentralization, and cross-platform compatibility. The intention of Web3 is to provide a more open and fairer digital environment, thereby addressing the shortcomings of Web2 (Wood, 2014).

The foundation of Web 3 is built upon blockchain technology, smart contracts, and decentralized applications (dApps). As Nakamoto (2008) posited, dApps operate on decentralized networks, thereby reducing reliance on centralized authority. Smart contracts facilitate and enforce agreements without the involvement of intermediaries, while blockchain technology ensures the immutability and transparency of data.

The term "bridge" is used to describe technology or platforms that facilitate communication and interoperability between Web 2 and Web 3. Web 2.0 represents the current iteration of the World Wide Web, distinguished by the prevalence of static websites, centralized servers, and a notable absence of programmability. The objective of Web 3, also known as the "Semantic Web," is to construct a more decentralized and intelligent web, where data is more interconnected and applications are more interactive. It is important to note that Web3 is still in its infancy and that the development of the technology is ongoing.

The advent of Web 3 also saw the emergence of cryptocurrency. Cryptocurrency is a form of virtual or digital money that operates on decentralized networks, typically constructed on the basis of blockchain technology, and utilizes encryption for the purpose of ensuring security. A distributed ledger, otherwise known as a blockchain, serves to record each and every transaction conducted across a network of computers. In contrast to fiat currencies, which are conventional currencies issued by governments, cryptocurrencies are not governed by a central body. While the concept of cryptocurrency is undoubtedly appealing, it is essential to assess its viability and potential drawbacks (The Investopedia Team, 2024).

Despite the decentralization of the currency and the application of cryptographic techniques to secure transactions and control the creation of new units, which makes them resistant to fraud and counterfeiting, cryptocurrency is still not 100% safe (Wix Studio, 2023). To illustrate, the restricted availability of cryptocurrency is a notable factor. A significant number of cryptocurrencies are subject to a finite supply, which implies that the total number of units that can ever exist is constrained. To illustrate, the supply of Bitcoin is finite, with a total of 21 million coins in existence.

The first cryptocurrency, Bitcoin, was created in 2009 and has since become the most well-known and extensively utilized. Subsequently, a multitude of alternative cryptocurrencies, also designated as "altcoins," have been developed, exhibiting distinctive characteristics and applications (Reiff, N., 2022). Notable cryptocurrencies include Litecoin, Ethereum, Ripple (XRP), and numerous others. Cryptocurrencies can be utilized for a variety of purposes, including cross-border value transfers, investments, and online commerce.

In addition, while transactions are recorded in the blockchain, the identities of the parties involved are frequently pseudonymous. This provides a degree of privacy, although the degree of anonymity can vary between different cryptocurrencies.

In conclusion, cryptocurrency can be defined as a digital or virtual currency that is secured by cryptography and can be used to purchase goods and services, utilize apps and games, or engage in trading for profit. In order to utilize cryptocurrencies, it is necessary to possess a cryptocurrency wallet. There are numerous cryptocurrency exchanges that facilitate the purchase and sale of cryptocurrencies.

2. NFT AND BLOCKCHAIN TECHNOLOGIES

2.1 NFT in the Modern World

A review of the literature reveals a plethora of articles on NFTs and the metaverse. The majority of the articles are in English, although there are also Turkish-language sources. Additionally, I consulted sources in Russian, including the works of O. A. Rusakova, E. S. Grin, and, notably, V. P. Kirillov. The Turkish articles, as well as the scientific research of Erkan Saka, Fatoş Otçuoğlu, Okan Yüksel, Aslı Kucuroğlu Alkan, and Sevinç Koçak, among others, were instrumental in advancing my research.

A non-fungible token (NFT) is a cryptographic token that is stored on a blockchain and cannot be replicated. (Kharif, O., 2023). In contrast to cryptocurrencies such as Bitcoin or Ethereum, NFTs are not exchangeable and represent digital or tangible assets, including art, music, gaming items, and videos. Such transactions permit the purchaser to become the proprietor of the item in question, with the additional benefit of built-in authentication that serves as proof of ownership. NFTs have gained popularity in various fields, including digital art, music, gaming, and collectibles. They have already been sold for millions of dollars. They are created and stored on a blockchain, with Ethereum being a popular choice for NFTs, although other blockchains also support them.

Non-fungible tokens (NFTs) are digital assets that are distinct from one another and validated via blockchain technology. NFTs are an optimal means of confirming ownership of digital art, collectibles, and other unique goods, as they represent one-of-a-kind products, in contrast to cryptocurrencies like Bitcoin, which are fungible and replaceable (Wang et al., 2021).

The advent of NFTs has facilitated novel avenues for consumer engagement and brand involvement, thereby transforming the landscape of digital marketing. Businesses employ NFTs to offer distinctive digital content, foster client loyalty, and engage consumers with state-of-the-art experiences. For instance, companies such as Nike and Adidas have introduced NFT-based goods and experiences that provide customers with a combination of digital and tangible ownership (O'Reilly, 2022).

The market for art has existed throughout history; however, the two primary drivers of this demand that have emerged in the last several decades are particularly noteworthy. On the one hand, art is regarded as an investment. In this context, flexibility is the prevailing norm, with the quality of the work serving as the primary criterion for evaluation. Nevertheless, an increasing number of individuals are expressing interest in viewing works of art created by previously prominent artists. The number of art enthusiasts is consistently on the rise; however, the price of a single piece of art often begins at several hundred or even several hundred thousand dollars. Furthermore, a considerable number of art pieces are privately owned and inaccessible to even the most discerning observers. The rarity of individual works and the impossibility of duplicating them so that each copy has the same value had to be addressed in order to broaden the scope of art, overcome the social barrier, and ensure that everyone, including the lower and middle classes, had access to it.

The advent of digital art has precipitated a shift in the current scenario, creating an opportunity to make it genuinely democratic in a manner that is both affordable and responsive to actual economic demands (Kritikos, M., 2022). Despite the overall advancement of society, the fundamental nature of art itself remains unchanged. The advent of new technology has enabled spectators to appreciate a global work of art, while simultaneously affording artists greater opportunities to monetize their creations.

The genesis of this phenomenon can be traced to the conclusion of 2017, when the Crypto Kitties project attained a notable degree of popularity. Crypto Kitties is an Ethereum blockchain-based game that enables participants to purchase, sell, and breed cats or special NFT (non-fungible token) tokens on the Ethereum blockchain. Each token represents a unique cat, generated through the use of a smart contract. It is beyond question that Crypto Kitties has left a legacy of bringing non-interchangeable tokens to the attention of the general public. Those engaged in the production of digital art for use at crypto parties face a number of challenges in maintaining their copyrights online. The ability to sell one's work securely is made possible by the advent of NFTs. The ability to add precise qualities to non-interchangeable tokens and their smart contracts—such as the owner's name, extensive metadata, or secure file connections—substantially aids the protection of artists' copyrights.

In the context of the sale of artwork, the use of NFT technology (non-interchangeable token) is a prevalent phenomenon. In contrast to traditional art forms such as paintings or sculptures, the token serves to represent the artwork itself, rather than the physical object.

The token can be resold and is registered in the digital register (Bernstein, C., 2023). The value of the artwork may fluctuate, but the token owner is not entitled to retain the original digital file. The simplest definition of an NFT is that it is a digital certificate of authenticity, which is becoming increasingly sought after as a collectible item.

The term "interchangeable" is often used to describe money, which is defined as a medium of exchange that can be exchanged for other assets of equivalent value. Conversely, NFTs offer an asset with a discrete value, frequently determined by the dynamics of supply and demand (Investopedia Team, 2024). Given that no two are identical, they cannot be interchanged with similar items. This renders non-interchangeable tokens more useful for blockchain applications that extend beyond the scope of digital cash. Consequently, the potential applications of this technology are limitless. Another significant attribute of NFTs is their indivisibility. This implies that it is not feasible to transmit a portion of a non-interchangeable token to another party.

The majority of NFTs are, in essence, a component of the Ethereum blockchain. Similar to Bitcoin or Dogecoin, Ethereum is a cryptocurrency; however, it functions differently than other cryptocurrencies due to the additional information stored in its NFTs, which are supported by its blockchain. It should be noted that different blockchains have the capacity to utilise disparate implementations of NFT. NFT is associated with the utilisation of technology for the sale of digital art, although it can also be applied to any digital content, including drawings and music, among other things.

A non-fungible token (NFT) is a digital asset that serves to verify the ownership of a work of crypto art. It functions as a unique identifier, linked to the work in question and incapable of duplication. The potential for attachment is limitless, encompassing not only image formats such as JPG, GIF, and MP4 but also audio formats such as MP3. The token serves to verify the ownership of the source file and is stored in a blockchain, an immutable registry accessible from any computer (B. Jacobs, 2022). The purpose of NFTs is to transfer ownership of the work, which is not duplicable. However, as with tangible works of art, the artist may retain copyrights and reproduction rights. In the context of collecting physical art, it is possible for any individual to purchase a Monet engraving. Nevertheless, only one individual is permitted to possess the original.

One of the most apparent benefits of purchasing works of art is the opportunity to provide financial support to artists. Moreover, purchasing an NFT typically entails certain fundamental usage rights, such as the capacity to post an image on a digital platform or utilize it as a profile picture. Furthermore, blockchain technology enables the verification of proof of ownership for digital assets through the use of a registry, which makes it exceedingly difficult to falsify information. This is because all computers are programmed to compare the data with one another, thus facilitating the identification of original and fraudulent information (Conti, R., Schmidt, J., 2022).

The issues of copyright and plagiarism have long been a significant challenge for those engaged in the creation of digital art. On the one hand, the majority of social networking sites automatically verify users' permission to use media files that they post. Nevertheless, the creation of a copy of the media for personal use is a simple process that can be completed with a few mouse clicks, and no payment to the creator is required.

By functioning as a virtual certificate of authenticity and effectively connecting the original digital artwork to a token, NFT resolves this issue and grants it the same status as the artist's signature on a tangible piece of art. Moreover, the token is not susceptible to fabrication, as it is an integral component of the blockchain and can be swiftly validated by any individual utilizing the public network. As a result of the inherent value of the original work, ascribed by the NFT, authors are able to disseminate copies of their work on social media without concern for its diminished worth (B. Jacobs, 2022).

In the retail industry, they can be utilized to authenticate and verify the ownership of physical or digital products, such as limited edition clothing or collectible items. Additionally, NFTs can be utilized to develop digital experiences, such as virtual try-on or augmented reality shopping experiences. In summary, NFTs have the potential to transform the manner in which retailers sell and authenticate their products, while simultaneously providing brands with novel avenues for customer and fan engagement and satisfaction.

NFTs represent a nascent and evolving technology, with a multitude of potential applications for marketing purposes. It is crucial for brands to experiment with different approaches to identify the most effective strategy for their target audience (Bernstein, C., 2023).

The question thus arises as to why brands begin to adapt to the digital realm and what the objectives and advantages are of venturing into the NFTs domain. First and foremost, it can enhance brand awareness, regardless of the brand's preexisting level of recognition. The mere mention of the brand name in conjunction with terms such as "NFTs" and "Web3" in headlines can serve to reinforce the brand's distinctiveness and appeal.

Another rationale for this phenomenon is the desire to create novel and distinctive brand experiences, thereby establishing a distinctive presence in the metaverse. Brands that are able to offer their customers a superior product or service to that of their competitors will inevitably be more successful (B. Jacobs, 2022). As an illustration, one of the benefits of possessing an NFT is that it can function as a membership card or a pass to a private club or an exclusive community. For brands, NFT products serve as a gateway into this rapidly expanding market.

Finally, it is essential to identify and pursue new revenue streams. Non-fungible tokens (NFTs) can be manufactured in any quantity, are comparatively inexpensive to produce, and can be sold without the need for manufacturing or shipping. In essence, this implies that the proprietor of the NFT has complete autonomy over the pricing structure (Computers & Industrial Engineering, 2024).

However, what advantages do NFTs offer? One advantage of possessing a non-fungible token (NFT) is that it can function as a membership card or pass to a private club or exclusive community. In certain instances, NFT holders may be extended an invitation to attend physical events and meetings (Computers & Industrial Engineering, 2024). Ownership of an NFT may afford the holder access to exclusive experiences and opportunities that are not available to the general public.

Also, for example, they may receive benefits such as special discounts on new products, early access to store openings, or invitations to events for participants only. Since the ownership of NFT is verified through the blockchain, it is impossible to fake the ownership of NFT. Thus, only the holders have access to benefits of the NFT.

In addition to the financial advantages, there are a number of reasons why brands have been drawn to the NFT space. One potential rationale for this transition is that companies may view it as a means of reducing the environmental impact of their operations. This could be achieved by producing fewer physical items, which would consequently result in a reduction of pollution and waste. Other brands may perceive the utilization of NFTs as a means of fortifying their bond with consumers or of investigating novel business prospects (Computers & Industrial Engineering, 2024).

Another potential benefit for brands is the ability to combat the proliferation of counterfeit products and pirated goods through the use of NFTs. The use of NFTs enables brands to reinstate the perception of luxury, individuality, and exclusivity in their products, which may be diminished in the presence of counterfeits in the market. The use of NFTs can assist brands in safeguarding the authenticity and value of their products, while simultaneously fostering a more profound connection with their customers (Computers & Industrial Engineering, 2024).

Should NFTs prove capable of altering the strategy of selling in the future, they may be employed not only for the purpose of collecting, but also for the performance of specific tasks within the metaverse. As an illustration, they may be employed to gain access to exclusive content or to participate in events. At present, a considerable number of NFTs are priced at a premium. It is possible that in the future they may become more accessible to a wider audience. Furthermore, it is conceivable that NFTs will become more prevalent in everyday life in the future. As an illustration, they may be employed to authenticate the genuineness of goods or services.

The NFT is a speculative bubble that is particularly susceptible to collapse, which could result in significant losses for investors. Furthermore, the concept of artificially created digital scarcity, upon which the value of NFTs is based, has been the subject of criticism. Furthermore, the proliferation of technology has resulted in an influx of hundreds of thousands of works on various platforms, which has created a challenge for potential collectors or buyers in terms of visibility.

2.2 Economic Side

The advent of non-fungible tokens (NFTs) has had a profound effect on the economic landscape, particularly in sectors such as art, gaming, and virtual real estate.

The growth of the market is as follows: The NFT market has experienced exponential growth, with total sales volume an increasing exponentially from $250 million in 2020 to over $10.7 billion in the first three quarters of 2021 (Herrera, P., 2021). This exponential growth is being driven by a surge in interest in digital art, collectibles, gaming, and virtual real estate, which is indicative of a significant economic impact.

The emergence of new revenue streams: The tokenization of creative works and the use of decentralized autonomous organizations (DAOs) to manage these tokenized assets provide creators with new revenue streams. Non-fungible tokens (NFTs) provide artists and creators with the opportunity to monetize their work through royalties and secondary market sales, thereby expanding economic opportunities in the digital goods space and providing additional revenue streams.

Investment opportunities: The integration of NFTs and DAOs offers investors a range of transparent and diverse investment opportunities. By participating in the growth of digital assets and engaging in decision-making processes through NFTs and DAOs, investors can gain exposure to a new class of digital assets, thereby increasing economic diversity and transparency in the market.

Democratization of ownership: NFT-DAO collaborations facilitate a more equitable distribution of ownership of digital assets, enabling individuals to have a stake in the digital assets they care about (Stellar8 Labs., 2023). This democratization of ownership contributes to the inclusivity of the digital economy by enabling a broader range of participants to engage in the ownership and trading of digital assets.

Cultural institutions: The advent of NFTs has prompted cultural institutions such as museums and galleries to collect NFTs and develop exhibitions dedicated to digital art (Ahmed, U., 2023). By offering NFTs, these institutions are capitalizing on the growing market of collectors and investors interested in digital art, thereby creating new economic opportunities within the art world.
New Asset Class: NFTs create a new way to own and trade digital assets, potentially boosting digital economies.
Content Monetization: Artists and creators can use NFTs to sell their work in a new way and potentially reach a wider audience.
Challenges: NFTs also have downsides, which are listed below.

Speculative Bubble: The NFT market is seen as a bubble, with inflated prices that already crash.

Environmental Impact: Similar to some cryptocurrencies, NFTs rely on energy-intensive blockchain technology.

Accessibility: The NFT market can be complex and inaccessible to those lacking familiarity with cryptocurrency and blockchain technology.

In essence, NFTs signify a transformation in the economic milieu, whereby they engender novel revenue streams for artists, facilitate a multiplicity of investment avenues, facilitate the democratization of ownership of digital assets, and prompt cultural institutions to adapt to the digital art market.

As for cryptocurrency there are:

Financial Inclusion: Crypto offers financial services to people without access to traditional banking systems. This can be particularly beneficial in developing economies.

Investment Potential: Cryptocurrencies can be a volatile but potentially lucrative investment option.

Cryptocurrencies raise concerns about:

Volatility: Their value can fluctuate significantly, leading to financial instability.

Regulation: Lack of clear regulations can create uncertainty and risks.

Illegal Activity: Cryptocurrencies can be used for illegal activities due to their anonymity.

Environmental Impact: Mining some cryptocurrencies requires significant energy consumption.

In conclusion, the advent of cryptocurrencies and NFTs has had a profound impact on the global economy, creating new avenues for economic activity, driving technological innovation, influencing cultural institutions, redefining values and property rights in the digital domain, and propelling the growth of numerous industries. As these digital assets continue to evolve despite their diminishing importance in the present, it seems probable that they will play an important role in shaping the future of the global economy for some time to come (Hacioglu, 2019).

2.3 Cryptocurrency

A considerable number of individuals have demonstrated interest in cryptocurrencies, allocating resources—including financial capital, time, and computational capacity—toward the advancement of this digital asset class. These resources have facilitated the emergence of a decentralized payments ecosystem, wherein transactions are not contingent upon the centralized authority of a financial institution. Moreover, cryptocurrencies provide a foundation for systemic trust based on predefined guidelines. In certain instances, users are afforded the opportunity to modify these guidelines, as evidenced by the practice of forking a cryptocurrency branch with new regulations. In addition, cryptocurrencies provide a certain degree of transactional anonymity.

In order to sell objects of crypto art, it is necessary to submit an application on a specialized website and obtain consent to use platforms designed for invitees only (Glover, E., 2022). Some of the aforementioned platforms are relatively straightforward to access, such as Async.art (which is a programmable art market) and Rarible. Conversely, others are considerably more challenging to navigate. In its report, NonFungible.com, a company that publishes an analysis of the NFT market, states that in 2020, NFT trading was valued at over $250 million, representing a nearly 300 percent increase from the previous year. On online platforms such as Raible, OpenSea, and Nifty Gateway, individuals utilize substantial sums of cryptocurrency and legitimate payment methods to purchase tokens representing ownership of digital objects, which are subsequently often re-auctioned at elevated prices. Some NFTs serve as replacements for collectibles in the CryptoKitties tradition, while others are objects designed for use in video games. However, they are increasingly being linked to digital artworks. Some NFT marketplaces afford users the opportunity to exhibit their acquisitions in a manner analogous to an online gallery or museum.

The following section will present the drawbacks associated with the primary registry technologies. The first blockchain to present difficulties is the Bitcoin blockchain, which, as of November 2021, had reached a size of approximately 380 GB. The size of the blockchain is increasing at a relatively consistent rate of approximately 7 GB per month. The scale of the blockchain is resulting in an increase in communication costs, which are essential for maintaining its distributed, synchronized, and somewhat redundant structure (Denis Trcek, 2022). Moreover, the underlying concept of proof of work (PoW) is inherently unstable from an energy perspective. The global demand for energy to mine bitcoins (i.e., create new blocks in the blockchain) to maintain the functionality of cryptocurrency platforms exceeds the energy consumption of certain developed nations, such as Switzerland. Moreover, public key cryptography necessitates a considerable amount of processing power. Lastly, the current financial compensation for maintaining records is relatively modest and is based on direct payment for the time invested. However, the precise amount of the remuneration varies considerably.

One prevalent application of blockchain technology is the use of tokens. Digital assets that are implemented on the blockchain as miniature programs are referred to as "tokens." Their capacity for programming endows them with the potential to be utilized in a multitude of creative and adaptable ways. Tokens may be utilized as a medium of investment, as a local currency within decentralized applications, or as a mechanism for fostering community or ecosystem development. Tokens are classified according to their primary function, with payment, security, and service tokens representing distinct categories. This study focuses on the identification of tokens on Ethereum, the most popular token network. Ethereum smart contracts are programs that possess the capacity to provide standardized interfaces for compatibility (Glover, E., 2022).

The token serves to verify the ownership of a work of art, regardless of its format, whether that be JPEG, MP4, or WAV. Furthermore, all other stakeholders of the cryptocurrency market concur with this assessment. One of the arguments against NFTs is that it is possible for someone to take a screenshot or record the screen. A digital copy of the work itself in some format may be obtained, but not a token. Consequently, there is no consensus regarding the ownership of the work (Denis Trcek, 2022).

It is important to note that NFTs differ significantly from other forms of currency, including traditional fiat currencies such as dollars and euros, as well as alternative digital currencies like the Turkish lira and cryptocurrencies. The primary distinction between NFTs and other forms of digital assets lies in their "non-fungibility," which sets them apart from other forms of digital assets. Tokens that signify an entry in the blockchain are employed in open blockchain systems, analogous to NFTs. However, in the context of NFT technology, tokens lack the interchangeability feature and instead have unique identifiers. This is in contrast to the case of an open blockchain where all tokens are interchangeable, and a user's bitcoin is identical to another user's. In this context, non-interchangeable tokens are not subject to division, replication, exchange, or replacement (Kirk, M.E., 2022).

The interchangeability of assets such as fiat money and cryptocurrencies is contingent upon the ease with which one monetary denomination can be exchanged for another following receipt. In this process, the value of the money is retained. The ease with which a client may divide one lira, dollar, or bitcoin into pence, cents, or satoshi is not a characteristic that can be attributed to NFT tokens. These tokens are created, kept, and offered for sale in whole, with no option to split them into equal parts. This attribute of NFT tokens serves as the foundation for their primary differentiating factor, namely, their uniqueness (Kirk, M.E., 2022).

The items available on NFT marketplaces are comprised of a variety of works produced in a specific edition. It is possible to sell cryptoart as a standalone item, as a single copy, or alternatively, to designate a specific edition. The price of the token is inversely proportional to the circulation size. In addition, the price is typically influenced by the serial number. Items with a more appealing serial number tend to command a higher price.

A royalty percentage can be set in the NFT token. The underlying technology behind NFT allows creators to set conditions that impose royalties whenever their NFTs change hands on the secondary market - creators can earn passive income even after selling their creations to other users (Grant, M., 2023).

Consequently, they will consistently be entitled to a proportion of the proceeds derived from the sale of NFTs. In the event of a resale of a digital artwork, the original creator will receive 10% of the total sale price. This is calculated on the basis of the royalty rate that has been set. The advent of NFTs has the potential to revolutionize the management of copyrights. In addition to the initial sale, artists can now be compensated when their work gains value due to publicity, recognition, or other circumstances (Grant, M., 2023).

The three primary features that set blockchain tokens apart are as follows:
Programmability: Token contracts enable automated administration of elements like rule compliance.
Proof of unauthorized access: digital property has been tampered with, as evidenced by immutable traces of transfers in the blockchain.
Liquidity: The ease with which ownership can be split up into shares makes tokens more liquid than indivisible assets.

Disadvantages:

Scalability: Most marketplaces use Power (Proof of Work) algorithms, which take up a lot of resources when performing complex mathematical tasks to add transactions to the blockchain. Currently, NFTs using Ethereum will not reach the processing speed of Visa or MasterCard until they switch to Proof of Stake (PoS). OpenSea is currently conducting test trials of such algorithms with the prospect of transition.

The immutability of NFTs stored in the blockchain is a fundamental property of this digital asset. As previously stated, once minting has occurred, the token remains unaltered. Consequently, there may be instances where the creator of the NFT wishes to modify certain aspects of their intellectual property. The construction of all NFTs is based on the utilisation of smart contracts, the effective deployment of which necessitates a comprehensive understanding of the principles of computer programming. It is feasible to devise user-friendly templates for novel cryptocurrency assets; however, they will lack the adaptability of those constructed from the ground up (Denis Trcek, 2022).

In conclusion, NFTs enjoyed considerable popularity initially due to their novelty and ease of use. However, their appeal has since waned, and they are now facing a period of decline. Nevertheless, it remains unclear why NFTs are becoming less popular, and people are less inclined to purchase and resell tokens.

The bubble around NFT has burst for several reasons, which are listed below.

Hype and speculation. In 2021, NFTs were at the peak of popularity. Many people invested in them in the hope of a quick profit. This led to an increase in the prices of NFT, which was not based on their real value (CoinDCX , 2023).

Lack of demand: Most NFTs are digital art objects, collectibles, or game items. However, the demand for these items was limited. Many people simply did not see the value in owning a digital analogue of a physical object.

Declining interest in the metaverse: The metaverse is a virtual world where people can communicate, work and play. However, interest in the metaverse declined in 2023. This is due to a number of factors, including rising inflation and the instability of the cryptocurrency market (CoinDCX , 2023).

2.4 Overview of NFT Websites and Examples

The most renowned trading platforms and platforms for mining are SuperRare, OpenSea, Rare, Nifty Gateway, and others. Such trading platforms afford creators and art collectors the opportunity to create NFTs and to purchase or sell them. The majority of trading platforms utilize ether (Ethereum) as a cryptocurrency, although alternative cryptocurrencies may occasionally be accepted. Nifty is a digital platform designed for artists, accessible only upon invitation. To sell on Nifty, an artist must first undergo an evaluation process and receive an invitation.

OpenSea is a company that oversees the operation of the eponymous platform, facilitating the creation, purchase, and sale of NFTs. It became one of the inaugural genuine marketplaces within this particular sector of the cryptocurrency industry.

In 2021, OpenSea attained the status of the primary market for this asset class, facilitating over 90% of transactions (Finzer, D., 2022). The financial performance of one of the industry leaders is illustrated by the fact that $21 million worth of transactions were conducted through OpenSea in 2020. By 2021, the turnover had increased to $14 billion.

As reported by Dune Analytics, the platform is among the largest trading platforms for NFTs in terms of active users and wallets, with over 1.5 million active users by 2021.

In order to register on the platform, users are required to possess a crypto wallet. Such a wallet is utilized for the storage of public and private keys and is presented in the form of software, thereby enabling users to "sign" actions for the purpose of facilitating transactions on the marketplace, as well as to receive funds from sales and to remit commissions.

The majority of NFT trading platforms facilitate seamless interaction with Metamask, a browser-based wallet. Meta Mask is a user-friendly application that can be readily installed and utilized, establishing a direct connection to the NFT marketplace. (Centieiro, H., 2021, p. 48)

To log in to OpenSea, you need to log in to the website with a wallet Meta Mask and the system considers that the user is active. After logging in, you need to fill out a profile, choose a free name. You can also add your own social networks, write a small text – standard features of a public account.

Blur was launched in October 2022 and rapidly became the dominant platform in the market, displacing the previous leader, OpenSea. By March 2023, Blur had achieved a 70% market share. Following the distribution of the $BLUR token, the popularity of the marketplace increased. This token rewards users for trading on the marketplace and for completing various tasks. A considerable number of users have generated revenue through this platform.

Blur offers a multitude of advantageous features, including sophisticated analytical tools and the capacity to evaluate NFTs across an array of marketplaces. Moreover, transactions are completed at a considerably faster pace than on other platforms, with price fluctuations occurring in real time.

SuperRare was created by Pixura in March 2021. Initially, it was possible to get there only by an invitation link or after the approval of the moderators. Now registration is available to everyone, but there is a requirement for exclusivity — it is assumed that everything that is displayed here exists in a single copy. The account is blocked for violation.

SuperRare is one of the few websites where there is the possibility to advertise like in social networks — i.e. to increase your position in the search results through "likes" from other users. The most popular paintings are displayed on the main page in the "Best Artists", "Best Collectors" and "Largest Collections" gallery. It is easier for works from such collections to arouse interest at auctions.

3. ANALYSIS OF NFT TECHNOLOGY IN THE CONTEXT OF MCLUHAN'S TETRAD PRINCIPLE

3.1 Marshall McLuhan's tetrads

One of the most prominent figures in the field of communication theory is undoubtedly Marshall McLuhan. His notable theories and the capacity to anticipate the advent of a technology like the Internet at an early stage distinguish him from numerous other communication scientists. Marshall McLuhan has been described as the "greatest media theorist of the century," a "guru of communication technologies," an "oracle of the electronic age," and the "father of cyberspace."

The controversial nature of Marshall McLuhan's theories and studies has positioned him as one of the most contentious figures in the academic realm. (Gordon, W. T., 2002). However, at the age of twenty, while a student at the University of Manitoba in Canada, he recorded in his diary his intention never to pursue an academic career. In the process, he acquired knowledge despite the opposition of the professors. Despite his initial assertion that he would never pursue an academic career, McLuhan ultimately became an English professor. McLuhan held the position of English professor at various universities in the USA and Canada for a substantial portion of his academic career. In 1946, he relocated to the University of Toronto, where he pursued his studies until his demise.

Marshall McLuhan initiated a critique of the "content" that had hitherto been regarded as the dominant factor in the classical understanding of the communication system with the thesis "Medium is message." In McLuhan's theory, the concept of "content" was replaced by that of "form." In other words, For McLuhan, the medium through which communication occurs is of greater consequence than the message itself. He posited that the principal effect is produced by the "form" of the content, rather than by the "content" itself. (The Editors of Encyclopedia Britannica, n.d.).

McLuhan advanced the proposition that the medium through which a message is conveyed is of greater consequence than the message itself. This is referred to as the "medium is the message" thesis. McLuhan proposed that the method of transmission is of greater consequence than the content of the message. McLuhan distinguishes between two categories of communication media: "hot" and "cold." He asserts that cold means of communication afford their users a substantial degree of participation. (Koçak, S., 2016) Conversely, hot means of communication afford their users a diminished capacity for participation. In this context, McLuhan's distinction provides an alternative perspective on the evolution of humanity.

In historical terms, the tribal age, in which the spoken word and intensive participation were of paramount importance, was eventually superseded by the age of printing, in which individualism became the dominant force, and from there was replaced by electronic tribalism, which was shaped by audiovisual technologies.

McLuhan's concept of the "global village" has had a significant influence on contemporary discourse. The growing prevalence of the Internet has served to reinforce the notion of a global village. The advent of artificial intelligence and instant online translation programs has effectively transformed the world into a truly global village. We can exemplify this with the term “Global Village”, which was conceptualised in the late 1960s as the human interconnectedness on a global scale generated by electronic means of communication (McLuhan, 1995). The phonograph, radio, and television were the electronic media that the author was referring to; humanity would have to wait a few more years to discover the advantages of having an internet connection.

This demonstrates not just the continued relevance of Marshall McLuhan's ideas but also how, independent of the media, society has managed to create these so-called Global Villages by communicating over time and place. Since "there is absolutely nothing that cannot be avoided as long as there is a desire to con- template what is happening," social media has made it easier for people to interact with one another and create social networks in the global village, making them into incredibly connected units across time and space (McLuhan and Fiore. 1967).

In 1963, he established the Center for Culture and Technology at the University of Toronto. He has conducted research at the Culture and Technology Center, with a particular focus on the domains of communication and electronics. The center continues to operate under the designation "Marshall McLuhan Culture and Technology Program." [31].

McLuhan, a prominent figure in the field of communication, has also produced a substantial body of written work. Notable works of his theory include The Mechanical Bride (1951), The Gutenberg Galaxy (1962), Deciphering the Media (1964), The Medium is the Message (1967), and War and Peace in the Global Village (1968). (McDowell, P., 2021).

Following the symposium in San Francisco, he was inundated with requests to deliver speeches. Additionally, the phenomenal sales of Understanding Media, initially in hardcover and subsequently in paperback, contributed to a constant influx of requests for his input. He delivered addresses to a multitude of groups, including AT&T, IBM, the Container Corporation of America, and the American Marketing Association. The television programme entitled "This is Marshall McLuhan", which forms part of the Experiment in Television series, made its debut on the NBC network in March 1967. While he was still in New York, he leveraged his own well-known statement by publishing The Medium is the Message (co-produced with Quentin Fiore and Jerome Agel) and securing publishing deals for Culture is our business and Cliché to Archetype (with Canadian poet Wilfred Watson). In addition to Fordham University's Schweitzer Chair in the Humanities, McLuhan was bestowed with honorary doctorates by numerous other academic institutions.

In his later years, Marshall McLuhan proposed the application of a unified analytical framework to a diverse array of media forms. This is a straightforward concept that ensures a consistent set of inquiries are posed to each medium.

In the posthumously published Laws of Media (1988), co-written by McLuhan and his son Eric, the author argues that tetrads are "a means of focusing awareness on hidden or unobserved qualities in our culture and technology" (Kelly, O., 2011). This is consistent with his argument that all "human artifacts are human utterances, or outerings, and as such they are linguistic and rhetorical entities." Concurrently, the etymology of all human technologies is intrinsic to the human body itself. They may be conceived of as prosthetic devices, mutations, or metaphors of the body or its parts.

Although McLuhan did not intend for them to be viewed in a chronological order, he did occasionally refer to tetrads as succeeding one another (Kelly, O., 2011). The tetrad is designed to serve as a dynamic tool for delineating "situations that are in process," rather than as a scientific instrument for investigating the "grammar and syntax" of each object.

McLuhan's tetrad provides a heuristic framework for assessing the potential and impacts of technology. This illustrates that technology is inherently multifaceted and acts as a catalyst for numerous media-related inquiries, rather than providing a definitive resolution. In other words, the progression of technology is not linear.

The tetrad asks us to consider four questions:

What does the technology **enhance**? What does it amplify or intensify?

What makes technology **obsolete**? What does it replace or reduce?

What does the technology **retrieve**? What does it recover that was previously lost?

How does the technology **reverse**? How do these effects flip when the technology is pushed to its limits?

An examination of NFT examples through the lens of Marshall McLuhan's tetrad offers a more profound comprehension of their influence on society and the digital art market. By applying the tetrad to NFTs and responding to these questions, it can be stated that, firstly, NFTs serve to enhance the ownership and authenticity of digital assets, rendering them distinctive and non-interchangeable. Additionally, they render traditional methods of selling and distributing digital assets, such as through intermediaries like galleries or auction houses, obsolete (Yuhas, A. 2023). NFTs reinstate the concepts of ownership and scarcity in the digital domain, which had previously become obsolescent due to the ease of copying and sharing digital content. Ultimately, if NFTs are taken to their logical conclusion, they could result in a system where ownership of digital assets is concentrated in the hands of a few, which could lead to issues of inequality and exclusion.

The laws of the tetrad exist concurrently and are not presented in a sequential order. The tetrad is a tool that enables media ecology to describe the environment in its totality, such that no category is privileged over the others. All four aspects are complete and internal in all respects from beginning to end. As an analytical tool, tetrad analysis offers a rapid method of identifying the characteristics and actions applied to individuals through the use of new technology. The tetrad can be applied to any work or technological product, invention, or human creation within a broad thematic context. Furthermore, the tetrad is an ethically neutral tool, as it does not make any specific value judgments about the environment it characterizes. A tetrad is a versatile analytical tool that can be applied to a diverse range of subjects. McLuhan posited that the tetrad is applicable to all human works, regardless of whether they are tangible or intangible, and whether they are created by humans or by software. He further asserted that the tetrad can be applied to a diverse range of objects and concepts, including bulldozers, buttons, poetic styles, and philosophical systems. (Bayash, C.-C., 2015).

3.2 Methodology (Frame Analysis & Self Reflexivity)

In this thesis, I employ the frame analysis method to demonstrate how McLuhan's tetrads elucidate the brand's NFT evolution. Before proceeding, it is first necessary to provide an overview of the frame analysis method and to describe how it was described.

The method is defined as a technique used to examine how individuals comprehend situations and activities, focusing on the elements that comprise them. Frame analysis encompasses an examination of a multitude of elements, including images, stereotypes, metaphors, actors, messages, and more.

The sociologist Erving Goffman, who is credited with coining the term in his 1974 book Frame Analysis, posited that the concept of the frame refers to the culturally conditioned definitions of reality that enable individuals to ascribe meaning to objects and events (Shaw, E., n.d.).

The application of frame analysis is prevalent in the fields of communication studies, politics, social movements, and news. This analytical approach is utilized to examine the manner in which information and topics are presented and interpreted.

The existence of frames is not limited to a single level; rather, they can be observed at various points along a spectrum, from event frames to issue frames to master frames. It is incumbent upon the researcher to determine the appropriate unit of analysis. Interaction with an active audience: Frame analysis examines how the audience negotiates meaning and participates in the "work of the viewer" when interpreting frames. (Petrina, S., 2016).

Frame analysis has been applied in various fields, including social movement research, it is analyzing how social movements construct and deploy frames to mobilize support and action. There are also policy studies, which examining how policy issues are framed by different stakeholders to advance particular agendas. The last one is communication studies, whıch suggests investigating how news media frame issues and influence public opinion. Political science: Studying how political actors use frames to shape debates and persuade audiences. (Mendonça, R. F., & Simões, P. G., 2022).

Frame analysis is a valuable tool for understanding the social construction of reality and the role of language, symbols and culture in shaping our perception and interpretation of the world. By unpacking the frames that structure our experiences, frame analysis offers insights into the dynamics of power, meaning-making and social change.

Nevertheless, it is necessary to determine why this research method is more suitable for my work. The following section outlines several methods for employing frame analysis in the study of NFTs.

The language, imagery, and narratives utilized by NFT creators and platforms should be analyzed to ascertain the value and purpose ascribed to NFTs. It is important to identify any recurring themes, metaphors, and messages that shape the perception of NFTs.

Conducting a frame analysis of news coverage and commentary on Nfs. Identify the dominant frames used to present NFTs to the public, such as innovation, speculation, art, or collectibles. Analyze how these frames shape public understanding and attitudes towards NFTs. (Shaw, E., n.d.)

Analyzing how NFT communities, such as those organized around specific projects or genres, frame their identity, values, and goals. Look for how these frames are used to attract members, define boundaries, and mobilize support. (Petrina, S., 2016).

Examining how NFTs are positioned in relation to other emerging technologies like blockchain, cryptocurrency, and the metaverse. Analyze how these frames shape the perceived role and potential of NFTs in the broader technological landscape. (Shaw, E., n.d.)

Conducting comparative frame analyses of how NFTs are presented and understood in different cultural contexts, such as different countries or communities. Identify how cultural factors shape the frames used and their resonance with audiences. (Shaw, E., n.d.).

Studying how the frames used to present and understand NFTs have changed over time, from their early days to the present. Identify key events, discourses, and shifts that have influenced the evolution of NFT frames. (Diachuk, N., Svyrydiuk, T., Kryvoruchko, T., Biliuk, I., & Levchenko, O., 2021).

By employing frame analysis in the examination of NFTs, researchers can obtain insights into the social construction of this technology, its positioning in relation to other social and cultural phenomena, and the ways in which it is understood and mobilized by diverse actors. This can elucidate the broader implications and potential impacts of NFTs on society, culture, and the economy. I therefore believe that McLuhan's tetrads are more appropriate for the objective of my research.

Beside of this there are also an equally important and absorbing reserch method that used in antropology and called self-reflexivity, which additionally is a part of participant observation research method. Self-reflexivity is defined as a process whereby we as researchers "critically interrogate ourselves and one another regarding the ways in which research efforts are shaped and staged around the binaries, contradictions, and paradoxes that form our own lives" (Lincoln & Guba, 2003, 283).

In the initial stages of 2023, I was employed by one of the nascent companies operating within the NFT sector in Turkey. At the commencement of my tenure, the company had only been operational for a period of three months. Its primary objective was to assist prominent brands within the country in the creation of their own NFTs, acting as an intermediary in the sale of these assets and facilitating the integration of the digital and physical realms. I was responsible for authoring articles for the company's website and managing its social media accounts.

After a period of six months, it became evident that the demand for NFTs was already beginning to decline, and that the company was also significantly behind schedule in implementing its projects.

At the time, I was also in the process of writing my master's thesis, which addressed the topic of NFTs. However, contemporary evidence indicates a significant decline in the demand for purchasing and selling tokens. The rapidity with which the bubble surrounding this phenomenon has burst, and the ease with which the fervor of a year ago has receded, is striking.

Perhaps the most significant misstep was the extended period of time spent writing a thesis on a rapidly evolving subject matter without anticipating that by the time it was completed, the topic would have become obsolete. A further factor influencing the duration of the work was the evolution of Web 3 and NFTs during the research process. This resulted in the necessity to alter the course of my thoughts and to adapt the direction of my research.

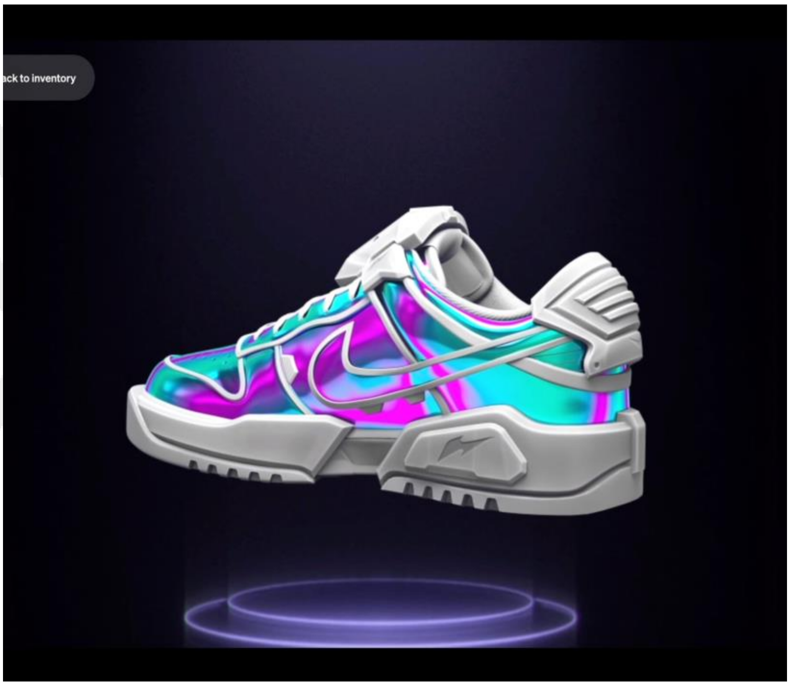
3.3 NFT Examples with Pictures

Since 2020, non-fungible tokens (NFTs) have begun to emerge as a more prevalent phenomenon, with an increasing number of companies investigating their potential applications. It is noteworthy that it took some time for major retail brands to fully implement NFTs in their activities. Nevertheless, only a select few brands have successfully resolved this challenge and begun integrating their products into the realm of tokens. We will now turn our attention to a selection of these cases.

In the fashion industry, NFTs can be utilized to create distinctive digital fashion items that can be purchased, traded, and amassed in a manner analogous to traditional fashion items. In light of the closure of stores and cancellation of fashion shows due to the pandemic, numerous brands have turned to video games as a means of connecting with customers and generating revenue. In this context, video games refer to the use of branded in-game items or sponsorship of events or tournaments within the gaming industry. This allows brands to reach a large and interested audience, thereby facilitating the discovery of new opportunities for growth.

For purposes of clarification, the following example illustrates the statistics collected for the Vogue Business Index. As of winter 2021, 17% of the brands included in the Index had engaged with NFTs. The NFT market itself is estimated at $11.3 billion, which demonstrates a period of rapid growth in recent years.

The advent of NFTs has precipitated a revolution in the fashion industry, offering designers a novel avenue for reproducing their works in the digital realm and monetizing them. To facilitate comprehension of the subject matter, it would be beneficial to provide illustrative examples. A number of prominent brands, including Nike, Gucci, Louis Vuitton, Balmain, Balenciaga, Salvatore Ferragamo, Burberry, and Ralph Lauren, have established a presence in the metaverse. Some of these brands have initiated the integration of NFTs with tangible products that customers can utilize, exemplified by Tiffany's "cryptopunk" pendants and Nike's RTFKT "cryptokicks." The concept of integrating digital assets with tangible products is a strategy employed by these brands to resonate with consumers on a global scale.



Pic. 1 Nike's RTFKT "cryptokicks" (https://www.nytimes.com/2022/05/26/style/nike-nft-sneaker.html)

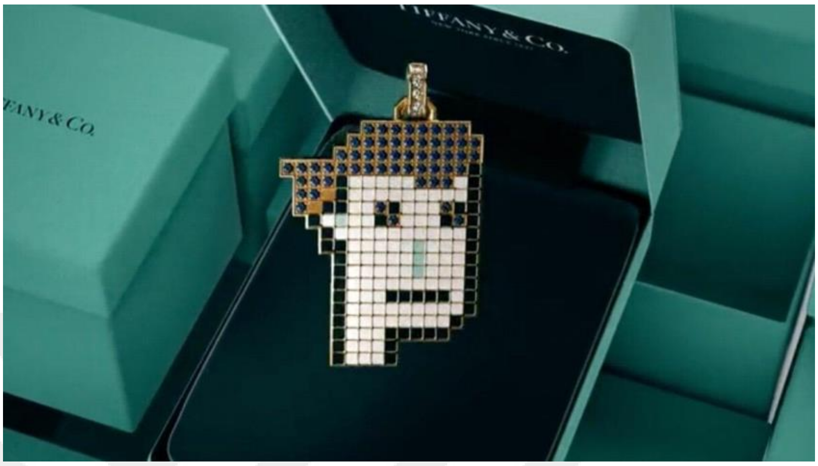
Additionally, Balmain unveiled the Balmain Barbie collection in January 2022, featuring renowned dolls showcasing their designs in the metaverse. This also includes a series of three Barbie avatars, created in collaboration with FORGOTTEN ME NOT GMBH, which were sold at auction and accompanied by a physical model of Barbie.

Pic. 2 Balmain Barbie (https://www.dazeddigital.com/fashion/article/55184/1/balmain-barbie-fashion-collaboration- HYPERLINK)

The other example is the collaboration of Dolce & Gabbana with UNXD, which became the first fashion house to release the NFT collection and was crowned with success. The one-of-a-kind collection is called Collezione Genesi and consists of nine items: five NFTs, which were accompanied by custom-made physical elements, and four strictly digital NFTs. The collection sold out for a shocking $6 million.

Pic. 3 Collaboration of Dolce & Gabbana with UNXD
(https://opensea.io/assets/ethereum/0xd71b53fe1df51075c5a965956cdc87421c2ffed7/5)

In April, Tiffany & Co. released the CryptoPunks pendant in rose gold with enamel, sapphire, ruby and yellow diamond. The reverse was engraved with the name Tiffany & Co. and the NFT number. The pendant was released in a single copy, the total revenue from which is $ 12.62 million.



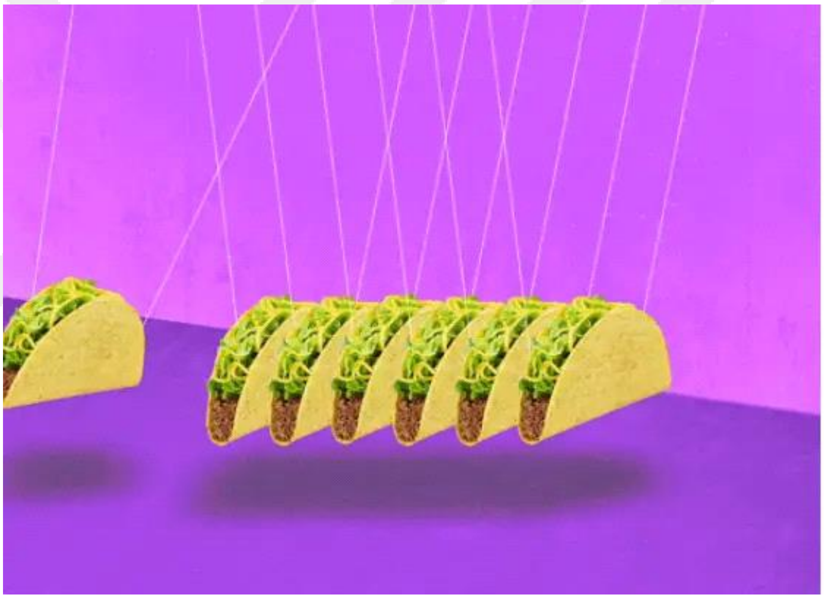
Pic. 4 Tiffany & Co. released the CryptoPunks pendant
(https://robbreport.com/style/jewelry/tiffany-nftiff-cryptopunk-pendant-collection-1234732784/)

In the field of marketing, the use of non-fungible tokens (NFTs) is also a prominent phenomenon. For example, it can be used to create unique and limited-edition products. Brands may create NFTs that represent unique or limited-edition products, including sneakers, watches, or even automobiles. This can facilitate the creation of a sense of exclusivity and rarity, thereby stimulating demand for the products. To illustrate, in March 2023, Nike unveiled a series of NFT sneakers, designated as CryptoKicks. The sneakers were swiftly sold out, with some now fetching thousands of dollars on the secondary market.

It is possible to cultivate customer loyalty and a sense of community. There are numerous methods through which NFTs can be utilized to cultivate customer loyalty and community. For example, brands may choose to distribute NFTs to their customers as a form of recognition for their loyalty, or alternatively, they may opt to create NFTs that confer exclusive access to events or promotions upon their holders. To illustrate, in February 2023, Starbucks initiated a novel loyalty program, designated as Odyssey. Members of the program are able to accrue points for the purchase of Starbucks products and the completion of activities. These points can then be redeemed for exclusive rewards, including NFTs.

The generation of a new revenue stream is a further potential benefit. NFTs can be utilized by brands as a means of generating a novel revenue stream. Brands may elect to sell NFTs directly to their customers or alternatively, to earn royalties on secondary sales of their NFTs. To illustrate, in January 2023, Dolce & Gabbana unveiled a line of NFT-based fashion items. The collection was sold out within minutes, and the brand generated over $5 million in revenue from the sale.

The following section presents additional examples of NFT usage in marketing by specific brands. In March 2022, Taco Bell released a collection of NFT tacos. The tacos were sold at a price of one dollar each, with the proceeds donated to the Taco Bell Foundation (Kritikos, M., 2022).



Pic. 5 Taco Bell released a collection of NFT tacos

(https://www.businessinsider.com/taco-bell-potatoes-return-celebrated-with-nft-crypto-collectibles-2021-3)

Adidas released a collection of NFT sneakers in December 2021. The sneakers were sold for 0.2 ETH each, and the proceeds were used to create a fund to support artists and creators. Adidas also combined its first NFT launch with a physical product line incorporating a tracksuit, a hoodie with a blockchain address, and an orange beanie.

NFL & Ticketmaster used NFTs to provide exclusive access to events, premium content, special promotions, and deals.

It is regrettable that there are no concrete examples of NFTs in Turkish brands. However, there are some cases related to NFTs in Turkey (Otçuoğlu, F., & Kucuroğlu Alkan, S. A., 2022). The search results indicate that Turkey has defined NFTs as "qualified intellectual property deeds" by the Digital Transformation Office of the Presidency. Nevertheless, the extant legislation governing Turkish capital markets makes no express provision for the regulation of NFTs or any other type of crypto asset.

Notwithstanding the absence of regulatory oversight, Turkish citizens are demonstrating a growing inclination towards the utilisation of cryptocurrencies and NFTs. Turkish artists are actively utilizing digital platforms such as OpenSea and Avalanche-based platforms to create and sell their NFTs. As Turkey transitions to a digital future, regulations are being established to accommodate the use of cryptocurrencies and NFTs. (Ozelli, S., 2022).

Avenue 10 Gallery, which has branches in Paris and Bangkok, digitizes physical artworks with the objective of offering high-end NFTs, which are sold on the Ethereum-based platform OpenSea (Ozelli, S., 2022). It is possible that NFTs may be defined as "payment instruments" in Turkey, which would mean that they cannot be used for payments in Turkey and that any payment would not be valid. It is projected that the NFT market in Turkey will experience a 20.25% growth rate between 2023 and 2027, resulting in a market volume of US$9850.0k in 2027 [41].

The aforementioned examples illustrate the versatility of NFTs as a promotional tool, demonstrating their efficacy in enhancing the visibility and appeal of a diverse range of products, services, and experiences. Effective NFT marketing campaigns identify the distinctive attributes of the product or experience and utilize these characteristics to engage the target audience, leveraging existing behaviors to enhance the impact of the campaign.

3.4 NFT through Tetrad Principle

In examining the applicability of McLuhan tetrads in contemporary contexts, we may pose four key inquiries to gain insight into the functioning of theoretical frameworks in the present era. By applying McLuhan's tetrad to NFT examples, insights can be gained into the impact of this technology on ownership, authenticity, and the relationships between creators, buyers, and the traditional art market. This highlights both the benefits and potential challenges associated with the technology. (Dall'Agnese, C. W., & Canavilhas, J., 2020).

To illustrate, we may undertake a general analysis based on the principles of McLuhan's tetrad with respect to Tiffany & Co.

Enhance: If Tiffany & Co were to introduce NFTs, they would likely enhance the exclusivity and authenticity of their brand. NFTs could provide a unique digital representation of Tiffany's iconic jewelry pieces, strengthening the connection between the brand and its customers in the digital world.

Obsolescence: The introduction of Tiffany & Co's NFTs could make traditional forms of jewelry ownership and collecting obsolete. It could challenge the conventional way of owning and displaying luxury items and move to digital ownership and representation.

Retrieve: Tiffany & Co NFTs could bring the concept of ownership and scarcity back into the digital space. By creating limited edition digital assets, Tiffany could revive the idea of owning unique and collectible items in the digital world, reminiscent of their physical luxury pieces.

Reverse: In the extreme scenario, Tiffany & Co's NFTs could reverse into a system where ownership of digital luxury goods is concentrated, which could lead to exclusivity and accessibility issues. This could lead to a digital divide where only a select few can afford or access Tiffany's digital luxury goods.

While this analysis is speculative, it provides a framework to understand how applying McLuhan's tetrad to Tiffany & Co's NFTs could impact the brand, its customers and the digital art market in general.

The same example can also be seen in Adidas.

Enhance: What does the technology enhance? Adidas NFTs enhance brand loyalty and customer engagement. They create a new way for fans to collect and own Adidas products, potentially increasing their value over time.

New forms and user experiences: Adidas NFTs offer a unique ownership experience. They could provide exclusive access to events, discounts, or digital content.

Obsolescence: What makes technology obsolete? Adidas NFTs could potentially make traditional physical merchandise less appealing to some collectors, especially those interested in the exclusivity and digital features of NFTs.

Retrieve: What does the technology retrieve that was once forgotten? NFTs revive the concept of collectible memorabilia in a digital format. They create a new kind of scarcity and value for digital assets.

Reverse: How does technology reverse the effects of the first aspect? While NFTs create a new kind of collectability, they are inherently digital and lack the physical presence of traditional memorabilia. This could potentially diminish the emotional connection for some collectors.

Unexpected consequences: The environmental impact of NFTs due to the energy consumption of blockchain technology is a growing concern. This could contradict Adidas' sustainability efforts.

In sum, McLuhan's tetrad offers a conceptual framework for evaluating the potential benefits and drawbacks of Adidas' NFT collection. It demonstrates how this novel technology can enhance brand engagement, yet it also gives rise to concerns regarding its environmental impact and the fate of tangible commodities.

The next example that will be discussed through the lens of Marshall McLuhan's tetrads is Lamborghini's NFT campaign, "The Epic Road Trip."

Enhance: The Lamborghini NFT campaign enhances brand engagement by creating a unique digital experience for collectors. By offering monthly NFT drops that showcase iconic vehicles in various environments, Lamborghini amplifies its presence in the digital space and connects with a younger, tech-savvy audience. The integration of gamification elements, such as puzzle pieces and exclusive rewards, further enhances customer loyalty and interaction with the brand.

Obsolescence: This campaign makes obsolete traditional forms of brand marketing and merchandise. The shift from physical collectibles and promotional items to digital NFTs signifies a move away from conventional marketing strategies. By embracing NFTs, Lamborghini reduces the reliance on physical goods and opens new avenues for brand engagement that resonate with modern consumers.

Retrieve: The NFT campaign retrieves the concept of exclusivity and collectability that has long been associated with luxury brands. By offering limited-edition digital assets, Lamborghini reintroduces the idea of owning unique items in a digital format, reminiscent of traditional luxury collectibles. This retrieval aligns with the brand’s heritage of exclusivity while adapting to contemporary consumer preferences.

Reverse: When pushed to extremes, the NFT campaign could reverse into a scenario where ownership of digital assets becomes concentrated among a select few, potentially leading to issues of accessibility and inequality. If NFTs are perceived solely as speculative investments, this could alienate casual fans and collectors who may not have the financial means to participate fully in the campaign, creating a divide between affluent collectors and the broader community.

By applying McLuhan's tetrad to Lamborghini's "The Epic Road Trip" NFT campaign, we can understand how it enhances brand engagement, makes traditional marketing methods obsolete, retrieves the concept of exclusivity, and raises potential concerns about accessibility and ownership in the digital space. This analysis highlights the broader implications of NFTs for luxury brands in navigating the evolving landscape of consumer engagement and digital ownership.

The last example is NIVEA’s “The Value of Touch” NFT campaign. The campaign invites you to “see the world the way you feel it.” They highlight the story of Clarissa Baldassarri, a visual artist who experienced a temporary loss of sight at the start of her career, sending her on a journey to discover how valuable touch can be. The NFT campaign launched in December 2021 and all 15,000 free NFTs were claimed in 48 hours (NFT.NYC, 2022).

Enhance: Nivea's NFT enhances the brand's engagement with consumers by promoting the importance of touch in a digital age. By collaborating with artist Clarissa Baldassarri, who has a personal connection to the theme of touch, Nivea amplifies its message about the emotional and physical significance of human connection. The NFT serves as a unique digital asset that fosters a deeper brand connection with audiences, particularly in the context of the pandemic, where touch deprivation has become a relevant issue.

Obsolescence: The introduction of Nivea's NFT makes obsolete traditional forms of brand engagement and marketing. By offering a free NFT that highlights the value of touch, Nivea moves away from conventional promotional products and physical merchandise, embracing a digital-first approach that resonates with modern consumers. This shift reflects a broader trend in the beauty industry towards digital assets and experiences.

Retrieve: Nivea's NFT retrieves the concept of experiential art and the importance of sensory engagement, which may have been overshadowed in a highly visual digital landscape. By focusing on touch and creating an artwork that invites tactile exploration, Nivea reintroduces the significance of sensory experiences, emphasizing that touch should be accessible to all. This aligns with the brand's commitment to promoting well-being and human connection.

Reverse: When pushed to extremes, Nivea's NFT project could reverse into a scenario where the focus on digital assets leads to a disconnection from physical experiences. While the NFT promotes the value of touch, an overemphasis on digital interactions might inadvertently diminish the appreciation for physical touch and human connection. Additionally, if NFTs become associated solely with commercial value and speculation, it could alienate consumers who are more interested in the emotional and experiential aspects of the brand.

By applying McLuhan's tetrad to Nivea's "The Value of Touch" NFT project, we can understand how it enhances brand engagement, makes traditional marketing methods obsolete, retrieves the importance of sensory experiences, and raises potential concerns about the balance between digital and physical interactions. This analysis highlights the broader implications of NFTs for brands in navigating the evolving landscape of consumer engagement and emotional connection.

CONCLUSION AND DISCUSSION

This master's thesis had two main objectives: first, to examine in detail the transition of civilization from Web 2 to the metaverse; second, to explore the NFT market, its existing platforms, and its development in recent years. In particular, consider the applicability of Marshall McLuhan's tetrads to NFT examples, and apply the resulting theory questions.

In accordance with the objectives of the study, the initial chapter of the final work examined and analyzed the directions of modern digital art, NFTs, and cryptocurrencies, as well as the study of McLuhan's theory.

The analysis leads to the conclusion that NFT technologies represent a potential solution to the issue of monetization, sale, and collection of digital works. The primary value proposition of crypto art is based on the intrinsic value of digital authenticity and ownership rights. As digital files are designed to be copied, shared, and distributed, the effective digitization of art requires special attention.

The second chapter was more focused on all possible examples of NFTs, examining them through the lens of the theory of tetrads. It also considered the author's personal experience working with the topic and the impact of these innovations on the economy as a whole.

NFTs have emerged with remarkable rapidity, with individuals and entities across the spectrum of society seeking to engage with them in various ways. For major brands, maintaining their image and keeping pace with societal developments is of particular importance.

However, less than three years have elapsed since the NFT model began to recede from public view. As previously stated, this phenomenon can be attributed to a multitude of factors, ranging from exorbitant price points to the continued appeal of investing in a non-tangible asset with an uncertain future.

In regard to McLuhan's theory, it is evident that marketing theory, which was first developed in 1975, is an integral component of my work. Perhaps the most striking aspect of the theory is its continued applicability to a vast array of contemporary issues.

The transition from Web 2 to Web 3 represents a pivotal point in the digital landscape, characterised by heightened user autonomy and decentralisation. NFTs have emerged as a powerful marketing instrument, offering distinctive avenues for engaging audiences and enhancing value.

Nevertheless, in order to fully leverage the potential of NFTs, marketers must address the associated challenges. As Web 3 develops, it is likely to exert a greater influence on marketing methods, further integrating digital innovation into consumer engagement techniques.

Additionally, the legislative system of the Republic of Turkey exhibits inconsistencies with regard to the taxation and insolvency of cryptocurrencies. The Regulation on the Non-Use of Crypto-Assets in Payments of April 16, 2021 (the "Crypto Payments Regulation") defines crypto-assets as "intangible assets that are created virtually using distributed ledger technology or similar technology and distributed over digital networks, but are not classified as paper money, deposit money, electronic money, payment instruments, securities, or other instruments of the capital market." In light of this definition, it can be argued that NFTs can be considered a form of crypto-asset in accordance with the provisions governing crypto-payments.

While the purchase or sale of cryptocurrency is not prohibited, certain restrictions apply with respect to its utilization in accordance with the aforementioned regulatory framework. Furthermore, payment service providers (banks and other electronic money institutions), payment institutions, and the Turkish Postal and Telegraph Corporation are prohibited from developing business models that utilize crypto assets in any capacity to issue electronic money or provide payment services. Furthermore, they are prohibited from providing any services related to such business models. In addition to the aforementioned provisions, it is prohibited for payment institutions and electronic money institutions to act as intermediaries for financial platforms or platforms that provide services related to the trading, storage, transfer, or issuance of cryptocurrency assets.

In consideration of the recently implemented Crypto Payments Regulation, it is currently not permissible to utilize crypto assets as a means of payment when purchasing NFTs in Turkey. Furthermore, customers are unable to benefit from the use of payment and the institution of electronic money to transfer fiat money to the NFT platform when performing a purchase transaction. (Otcuoğlu, F., & Kucuroğlu Alkan, S. A. (2022).

It seems inevitable that NFTs will retain their relevance, even if the level of enthusiasm among the target audience diminishes. The human inclination towards innovation and the intrinsic value of studying a subject with such intricate complexities will likely ensure that NFTs retain their position in the digital landscape.

Nevertheless, NFTs have experienced significant fluctuations in popularity and market dynamics, leading to discussions about potential alternatives or replacements. For better understanding, here are some insights based on the search results regarding what might change or replace NFTs.

Market Saturation: As the NFT market becomes saturated, there is a concern that the value of NFTs may decline significantly. This could lead to a shift towards other digital assets or investment opportunities that offer more stability or perceived value (Singh, P., 2022).

Cryptocurrencies continue to be a robust alternative, with many investors viewing them as profitable assets. As the market for cryptocurrencies expands, they may overshadow NFTs, especially if NFTs are seen as speculative and volatile (Singh, P., 2022).

Metaverse Projects: Businesses and projects that support the metaverse are emerging as potential replacements for NFTs. The metaverse offers new ways for users to interact and engage with digital content, which could provide more immersive experiences than traditional NFTs (Singh, P., 2022).

In-Game Microtransactions: NFTs are being considered as replacements for traditional in-game microtransactions, allowing for interoperable digital assets across different gaming environments. However, high transaction costs associated with current NFT technologies may hinder this transition until more efficient solutions are developed [53].

Ed-Tech Startups: The growth of educational technology (ed-tech) startups is another area where investment is expected to flourish, potentially diverting attention from NFTs. As technology becomes integral in education, these startups may offer more stable investment opportunities compared to the fluctuating NFT market (Singh, P., 2022).

Evolving Use Cases: While NFTs were initially associated with collectibles and art, their future may lie in broader applications such as loyalty programs, secure identity credentials, and new gaming experiences. This evolution could lead to a diversification of digital assets beyond traditional NFTs (Emergıng technologıes, 2023).

In summary, while NFTs have carved out a niche in the digital economy, their future may be influenced by market saturation, the rise of cryptocurrencies and metaverse projects, and evolving use cases that leverage blockchain technology in innovative ways.

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