



Adapting accounting standards to include the recognition, measurement, and treatment of NFTs: a study of art NFTs and how they should be treated in financial statements

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Research Dissertation

Adapting Accounting Standards to Include the Recognition, Measurement, and Treatment of NFTs

A study of art NFTs and how they should be treated in Financial Statements

Presented by : MURPHY Lyn

Host organization : Grenoble IAE

Date: from 11/03/22 to 13/06/22

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Master 2

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ABSTRACT

Non-Fungible Tokens (NFTs) are a relatively new form of financial security, which have grown in popularity at a phenomenal rate over the course of the last few years, most notably in the last two years. It is estimated that in 2021, the NFT market volume ranged from between \$12 billion to over \$26 billion (Baytaş, M.A., (2022)). The rate of growth in this revolutionary technology has given rise to a new and vast market for NFTs. This growth represents a very real market disrupter with significant implications for NFT stakeholders.

The industries which are mainly affected by NFTs include Collectibles, Gaming, Fashion, Art, Virtual Vehicles, and Real-World Assets and Documents. There are a number of stakeholders involved in the NFT marketplace, such as artists and creators, NFT owners, “developers, start-ups and investors, auction houses and corporates” (Baytaş, M.A., (2022)).

Within this novel and emerging market, there are a number of implications that must be considered. The market offers significant opportunities, while also posing high risks, which include but are not limited to ownership rights and rights to reproduce copies, highly illiquid assets, price uncertainty, entitlement to revenue streams, uncertainty around tax treatment of gains, scamming, and the correct treatment of NFTs in the financial statements.

This paper looks at NFTs in the context of the world of art, as they are undoubtedly having a huge impact in this area. The research undertaken as part of this paper aims to explain the increase in demand and popularity for NFTs, its consequences for the art market, as well as looking at how accounting standards should adapt to include digital artwork in the form of NFTs.

Key Words: *NFT, Token, Blockchain, Standard ERC-20, Standard ERC-721, Standard ERC-1155, Mining, and NFT Platforms / Marketplaces (such as Ethereum).*

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INTRODUCTION

DEFINITION

Non-Fungible Tokens can be defined as “cryptographic tokens built on the Ethereum blockchain. NFTs are ‘minted’ and then sold. Minting an NFT is the “act of publishing a unique instance of your ERC-721 token on the blockchain” (Mudgil, S. (2021)). Each token is unique, and this token proves that the holder, and only the holder, possess the ownership rights of the digital asset, for example, a piece of art” (Kugler, L. (2021)). Whereas other tokens, such as bitcoin, are fungible and one can trade one bitcoin for another. Non-fungible means that it is one of a kind.

This process has dramatically transformed the way in which the art market operates, with many stakeholders opting for the digital route, moving away from the traditional mode of operations. The sheer price alone has given digital art a sense of exclusivity, with digital art NFTs selling for millions of dollars. The most notable sale was that of the artist Pak’s artwork ‘The Merge’, which sold for an astounding \$91.8 million In December 2021 (Hood, D. (2022)). NFTs are “developed as a form of Blockchain, making it possible for them to eliminate intermediaries and facilitate easier connections between audiences and their artists” (Roberts, C. (2022)).

STAKEHOLDERS

It is important to note that there a number of different stakeholders involved in NFTs, for example, creators and sellers, and collectors. Creators benefit from a number of different features of NFTs, for example, content creators “have access to a global market, can retain ownership rights over their own work and claim resale royalties directly, and can determine the scarcity of their work” (Ethereum.org, (n.d.)). Content creators create NFTs through the process of minting (See appendix 1). Moreover, creators can gain from additional security through representation from art specialists who can offer guidance and can create more beneficial arrangements for the artist.

Collectors are another important actor when discussing NFTs, as they carry out the purchasing of the NFT. Their motivation to acquire may be driven from a desire to make a profit from a speculative investment in NFTs. They are the key players in the selection process of NFTs. The selection process typically involves the purchaser assessing the quality of the NFT that they are willing to purchase.

The content creators will fill in details on a “creator dashboard or public creator profile page. The details include information regarding prior experience in NFTs, social media accounts, and other

content creation” (Sharma, T. et al, (2022)). The collector is advised to review this information before purchasing the NFT. Studies have identified “several metrics for assessing the quality of NFTs and NFT creators, such as the number of followers on social media and in NFT marketplaces, record of interpersonal communication in the marketplace, history of prior spam incidents, and NFT ownership records, which can be integrated into the content creators’ profile” (Sharma, T. et al, (2022)). The validation process is necessary for the collector to ensure that they are purchasing a legitimate NFT from a legitimate creator in order to avoid scams and purchasing an unoriginal NFT.

SCAMMING

Fakes and forgeries are becoming a problem in the NFTs marketplace. NFTs hold the possibility of being affected by malicious actors, i.e., scammers.

According to a study carried out in the University of Illinois at Urbana-Champaign, USA, which focused on ‘Unpacking Creators’ Practices with Non-Fungible Tokens and their Communities, it was found that the participants, who are active in the world of NFTs, repeatedly highlighted the positive impact and importance of “common community practices” within the digital world. These included “alerting other community members about suspicious activities, such as scams. They established indicators to identify malicious actors, for example, malicious actors rarely communicate with others on a personal level, they often spam links of NFTs, and they create inconsistent content” (Sharma, T. et al, (2022)). Such malicious scammers typically work by copying the original content of a “popular and expensive NFT, applying negligible changes to the copied content, to create a new NFT to sell at a lower price” (Sharma T. et al, (2022)). This can often be successful as it targets inexperienced purchasers who may not know that the NFT they are purchasing is not the original and official NFT that they had understood they were acquiring for. This raises further questions regarding legislation and regulations surrounding NFTs which will be addressed later in this paper.

Phishing and scams are a common occurrence on online platforms, and there are a number of existing strategies in place in order to negate their impact. According to Sharma T. et al, these include but are not limited to:

- “Manually inspecting NFTs and compare them with existing NFTs,
- Reporting scams to NFT project administrators,
- Alerting and reminding other community members (via other platforms such as Discord and Twitter), and

- Using KYC-like processes and/or an 'invite-only' mechanism to restrict community membership, but this is only used on some NFT platforms at the moment" (Sharma T. et al, (2022)).

OWNERSHIP

One of the most notable features of NFTs are the ownership rights that one acquires with the purchase. After purchasing an NFT, the purchasing entity becomes the owner of the token, and it can be proven that the purchaser is the legitimate owner of the piece of art. NFTs can only have "one owner at a time, and this is controlled using a uniqueID and metadata that no other token can replicate" (Ethereum.org, (n.d.)). Further, "Ethereum's blockchain is a public ledger, allowing the NFT to be traceable when assigning and claiming ownership" (Ethereum.org, (n.d.)), giving further confidence to the entity seeking ownership rights.

Although there is "nothing stopping someone online from viewing, copying, and sharing a digital art file, nobody can fake possession of the art. NFTs have made it possible to have exclusive ownership of digital art, which was previously impossible" (Kugler, L. (2021)). This feature can be compared to official documents that an individual would receive had they bought an original piece of art in the physical form. "Before NFTs, there was no widely accepted way to determine the 'original' piece of digital artwork, or a way of proving or transferring its ownership" (Kugler, L. (2021)), and so as a result the digital world of art is changing rapidly.

Many acquirers wonder, '*what will I actually own after purchasing an NFT?*'. After purchasing an NFT the buyer officially owns the original piece of work which contains a digital signature from the creator or artist. To put this into context, here is a real-life example of what happens when an art NFT is purchased.

The CEO of 'MakersPlace', the company which minted and published one of the most famous art NFTs (Beeple), Dannie Chu, has discussed this notion. Chu succeeds in breaking down the idea of purchasing NFTs into simpler terms in order to make it easier to understand, for example, by relating NFTs to the Mona Lisa. In an interview conducted by Jack Morse in 2021, Chu says; "There are hundreds of thousands of prints and reproductions of the Mona Lisa, but since they are not the original Mona Lisa painted by Da Vinci himself, they are far less valued" (Morse, J. (2021)). The same idea can be applied to NFTs, as the NFT being purchased is the original piece of art that has been created by the creator. Chu continues with "the buyer of this artwork is purchasing an NFT, which contains the high-resolution digital artwork file itself, as well as an indelible signature of the artist and all transactions

associated with the artwork – basically digital proof of authenticity and uniqueness” (Morse, J. (2021)). This associated data, i.e., the signature and digital proof of originality and legitimacy is known as Metadata, which essentially describes data, which in this case, is the NFT. Beeple’s artwork was purchased by a pseudonymous user named ‘MetaKovan’, and so in purchasing this NFT, MetaKovan received a large volume of metadata along with the piece of art itself. It can be said that the true value lies within the metadata, as this is where the “name of the work, a longer description of the work, and the Uniform Resource Identifier (URI)” can be found (Morse, J. (2021)). The individual purchasing the NFT is “becoming the owner of a smart contract on the Ethereum blockchain which contains metadata” (Morse, J. (2021)). Therefore, the ownership refers to the metadata and its associated file, the URI, which is the file in which the art is associated with the NFT.

CREATING AND SELLING NFTS

The first step in creating an NFT involves choosing what it is exactly that the individual hopes to sell. The item being sold must be in digital form, so that it can be uploaded to a website. The process involves developing a crypto wallet and choosing the marketplace via which the user wishes to sell the NFT. The user then uploads the NFT file to the marketplace website which is the first step in the selling process. As the creator of the NFT, they will receive revenue for any sale of the digital asset. NFTs can become a profitable source of income for NFT creators. This process will be explained in more detail later in this paper.

MARKET

NFTs can be bought and sold on every Ethereum or NFT marketplace, which can be accessed globally. For example, ‘Opulence’, run by Seyi Awotunde, a marketplace for art which is backed by NFTs (Kugler, L. (2021)). Other marketplaces include OpenSea, Rarible, Mintable, Foundation, SuperRare, Nifty Gateway, Makersplace, KnownOrigin, and Async Art, to name a few. Marketplaces operate as a sort of digital gallery, i.e., a place for creators to display their artwork, but also a place where those willing to purchase an NFT can do so.

Marketplaces operate with the creator of the NFT placing their digital piece of artwork up for sale, reaching an audience they hadn’t before, and raising awareness of their work. The creator also defines the methods of payment that they are willing to accept for their piece of work, and they set the price. For the buyer, NFTs allow the collector to enhance their collection, and make a potentially profitable

transaction. Some argue that the NFT market has similarities to the early days of the internet when there was a general reluctance towards making online purchases.

STANDARDS

At present, NFTs are not subject to any regulation, which means there is little or no legal protection for the stakeholders involved.

A number of token standards exist with the intention of regulating the NFT market by offering certain protocols that must be followed, most notably ERC-721 (ERC: Ethereum Request for Comment). This standard relates to the originality, or non-fungibility of NFTs, i.e., each NFT is unique to another. ERC-721 introduces a standard for NFTs, i.e., that this “type of token is unique and can have a different value to a token from the same Smart Contract, which can be due to its age, rarity, or even its visual (Ethereum.org, (2022)). The standard provides important guidance regarding tracking and transferring NFTs. The ERC-721 was proposed by William Entriken, Dieter Shirley, Jacob Evans, and Nastassia Sachs in January of 2018, and implements an application programming interface (API) for tokens within Smart Contracts (Ethereum.org, (n.d.)). This standard provides “functionalities such as transferring tokens from one account to another, to obtain the token balance of an account, to get the owner of a specific token, and also to find the total supply of the token available” (Ethereum.org, (n.d.)). Tokens on Ethereum can be easily inspected, tracked, and transferred with the implementation of this standard.

ERC-20 is an additional standard for NFTs, which is followed by tokens and enables the possibility of “writing tools, such as liquidity pools and wallets, that work with all ERC-20 tokens” (Pomerantz, O. (2021)). The standard serves the purpose of “allowing many token implementations that are interoperable across applications, like wallets and decentralised exchanges compatible” (Pomerantz, O. (2021)). This is achieved through the creation of an interface, which essentially allows different applications to connect with each other. “Any code that needs to use the token contract can use the same definitions in the interface and be compatible with all token contracts that use it, whether it is a wallet such as MetaMask, a dapp such as etherscan.io, or a different contract such as liquidity pool” (Pomerantz, O. (2021)). The result of this standard highlights that “any information that a smart contract can access is available to the whole world, i.e., there are no secrets on the blockchain” (Pomerantz, O. (2021)). Although certain individuals may believe this is a disadvantage, it can be argued that the standard ERC-20 enhances transparency and improves users’ experiences, because different applications are now compatible with each other.

Another prevalent standard for NFTs is ERC-1155. It is a multi-token standard, meaning that it seeks to create a “smart contract interface that can represent and control any number of fungible and non-fungible token types” (Ethereum.org, (n.d.)). Therefore, ERC-1155 can perform the same functions as both ERC-20 and ERC-721 tokens, and even both at the same time. ERC-1155 “improves the functionality of both of these standards, making it more efficient, and correcting certain implementation errors on the ERC-20 and ERC-721 standards” (Ethereum.org, (n.d.)). Standard ERC-1155 has been recently developed to “support NFTs and fungible tokens. It improves upon the ERC-721 standard by making NFTs faster and more efficient to use in batch transfers” (PWC, (2022)). According to some estimates, the standard can see a reduction in gas fees by up to 90% (PWC, (2022)). Gas fees are affected by the level of minting taking place on a server at a time. During periods of high minting demand, gas prices increase due to the computing power required to perform transactions on the blockchain.

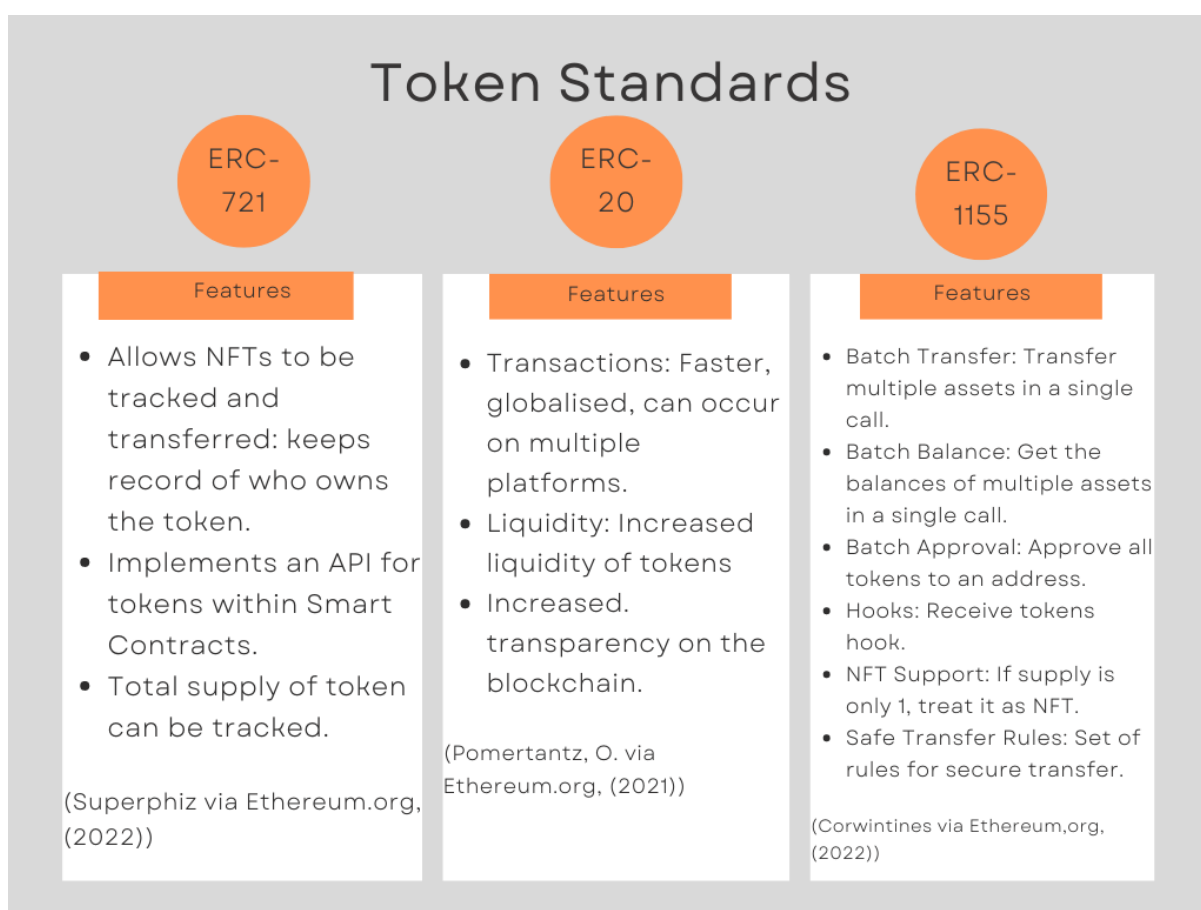


Figure 1: Token Standards (Source: Author’s own Research (2022)).

Each standard serves a different purpose, and all contain different features and advantages for the use of NFTs. There are a number of other token standards that exist, but focus more on fungible tokens, such as Bitcoin or other cryptocurrencies, i.e., they are less focused on non-fungible tokens and so are less relevant for this research.

PART 1 :
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LITERATURE REVIEW

CHAPTER 1 – LITERATURE REVIEW

The following literature review contains an analysis of a number of different articles ranging from NFTs, art, and accounting.

I. WHAT ARE NFTS?

Non-Fungible Tokens can be defined as “cryptographic tokens built on the Ethereum blockchain. NFTs are ‘minted’ and then sold. Minting an NFT is the “act of publishing a unique instance of your ERC-721 token on the blockchain” (Mudgil, S. (2021)). Each token is unique, and this token proves that the holder, and only the holder, possess the ownership rights of the digital asset, for example, a piece of art” (Kugler, L. (2021)). Whereas other tokens, such as bitcoin, are fungible and one can trade one bitcoin for another. Non-fungible means that it is one of a kind.

The idea of Non-Fungible Tokens originated on the 3rd of May 2014, when Kevin McCoy minted (i.e., converted digital data or digital assets into crypto collections on the blockchain) the non-fungible token ‘Quantum’. Minting acts as a form of guarantee that the creator of the NFT will receive money for their original creation.

NFTs began to increase in popularity among the public in 2017, when the game ‘CryptoKitties’ was responsible “for clogging up the Ethereum network because people were rushing to buy cartoon cat NFTs which delayed transactions and increased the gas price (see further). (PWC, (2022)). Roberts, C. (2022) confirms that the use of fungible tokens and NFTs has consistently increased in recent years. Roberts continues by stating that at present, the NFT market is primarily based on certain collectibles, such as “rarities, sports cards, digital artwork”.

II. NFT TRADES

Weekly trading volume of NFTs by category (\$m)¹

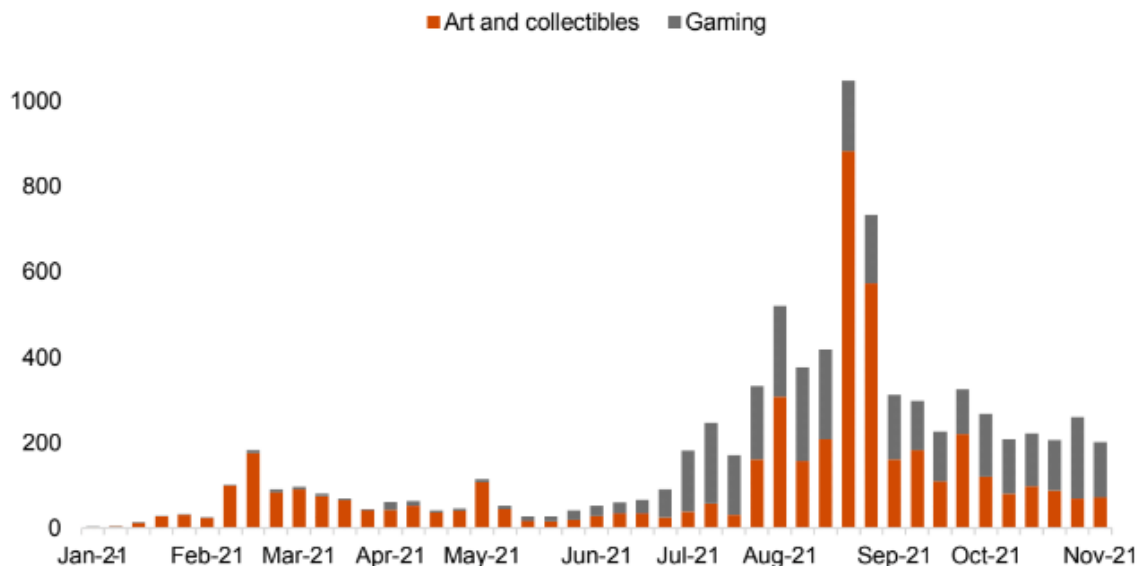


Figure 2 : Weekly Trading Volume of NFTs by Category in \$m (Source: PWC (2022))

The volume of trades of NFT artwork has dramatically increased, highlighted clearly by the above image. Although the trading of gaming is significant, it is less remarkable than that of art. Another point to note from the above image is the time frame in which major increases in trades were noted. This increase will be explained further in this paper.

Roberts' research sought to define NFTs, the difference between fungible and non-fungible, standards such as ERC-20 and ERC-721, and to explain different platforms which are used for trading, such as Ethereum. According to Roberts, NFTs can be described as "blockchain cryptographic assets with distinct metadata and identification codes that make each one of them different. The primary difference between NFTs and cryptocurrencies is that cryptocurrencies can possibly be exchanged or traded at equivalency, whereas NFTs cannot, being the fundamental difference between fungible and non-fungible tokens, i.e., fungible tokens are similar to each other and can be effectively traded or used for commercial exchange purposes or transactions, such as cryptocurrencies". In contrast, each NFT is fabricated in such a way that each of them can be used for various application purposes. For instance, NFTs can digitally represent physical forms of assets, such as artwork. NFTs exist on a Blockchain, a type of ledger, which facilitates the easier recording of transactions. They are most often

made available on the Ethereum platform. This definition of NFTs is supported by further researchers, with (Chalmers, D. et al. (2022)) defining NFTs as “blockchain enabled cryptographic assets that represent proof-of-ownership for digital objects” and further confirming that NFTs are being used by “creative industry entrepreneurs who have sought to generate new revenue streams and modes of stakeholder engagement”. NFTs’ specific feature, non-fungibility, permits them to eliminate intermediaries and facilitate an easier connection between audiences and artists. They can also be applied for the purposes of identity management. This represents a major difference between fungible tokens, like Bitcoin, and non-fungible tokens, such as a piece of digital art, as the anonymity linked to fungible tokens, like cryptocurrencies, is a major issue of concern for regulators. Anonymity prevents cryptocurrency transactions from being adequately monitored, which can lead to problems such as tax fraud and money laundering (Houben, R and Snyers A. (2018)).

III. MARKETPLACES

NFTs operate in multiple different marketplaces online, such as Ethereum, OpenSea, and Rarible, to name a few. Marketplaces operate as digital platforms which are used for the buying and selling of NFTs. Creators have the ability to upload their NFT to the online platform, where they can then receive purchase offers from customers. The figure below shows a number of the NFT marketplaces monthly volume in millions of US dollars.

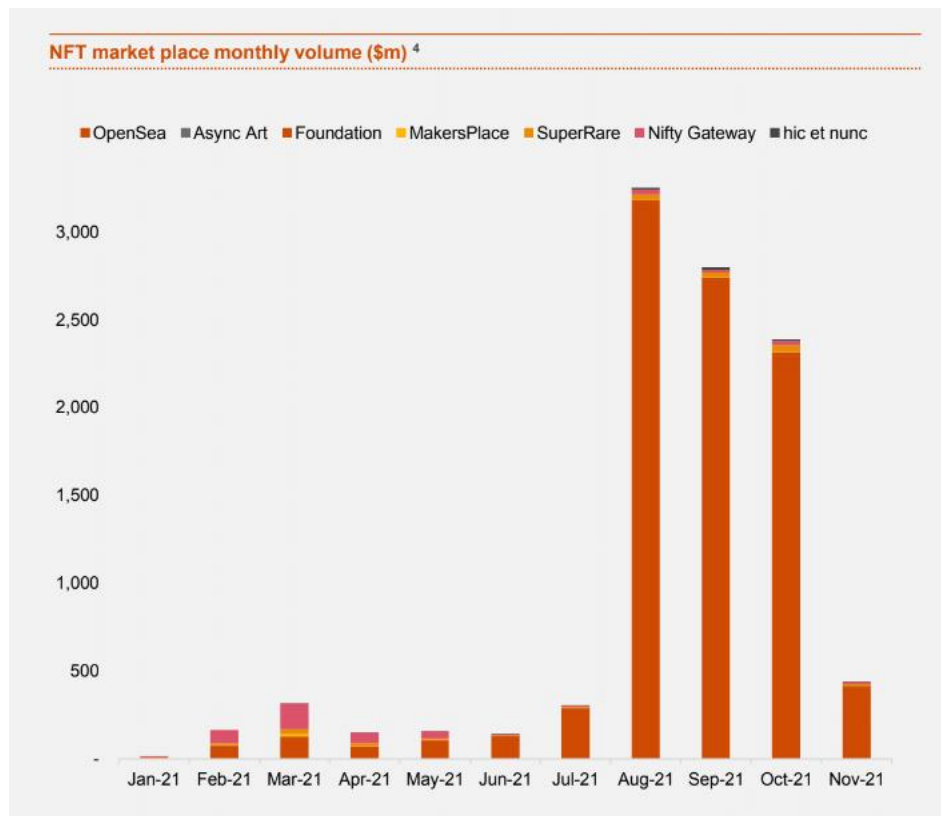


Figure 3: NFT Market Place Monthly Volume (Source: PWC (2022))

As shown above, these platforms have generated significant revenues most notably in the months of August and September of 2021. For the full year analysed, OpenSea is the most popular marketplace. OpenSea is the largest trading platform for NFTs. In August of 2021, OpenSea reached trade volumes of \$3.4 billion. OpenSea “commands almost the entirety of the emerging NFT market, accounting for more than 97%” (Fries, T. (2021)). “The company’s easy-to-use listing features, robust filtering and cataloguing system combined with its wide breadth of assets might be the major factors contributing to its dominance” (Fries, T. (2021)). Despite this, OpenSea faces a lot of competition from other NFT marketplaces, including those mentioned in the image above, but also others such as Coinbase, and Rarible. Rarible offers zero-cost to mint an NFT, rendering the marketplace an attractive option, which may raise issues for OpenSea in the future, as OpenSea charges a “2.5% fee in addition to the already high gas fees” (Fries, T. (2021)).

IV. POPULARITY OF NFTS

Although NFTs have been in existence since 2014, it was in 2021 was the year that NFTs became more popular. Why is this? One possible explanation can be attributed to a study carried out by Pinto-Gutiérrez, C., Gaitán, S., Jaramillo, D., and Velasquez, S. which analysed the hype around NFTs in 2021. Their study used Google search queries to analyse drivers of attention to non-fungible tokens, using weekly data between 2017 and 2021 (Pinto-Gutiérrez, C. et al (2022)). It was found that search activities for both the terms ‘non-fungible token’ and ‘NFT’ on Google were “positively associated with major cryptocurrency returns” (Pinto-Gutiérrez, C. et al (2022)). Similarly, they arrived at the same conclusion when specific NFT collections were searched for on Google, some of which included collections such as ‘CryptoPunk’ and ‘Decentraland’. The researchers used “Vector Autoregressive (VAR) models to discover that the previous week’s Bitcoin returns are significant attention drivers to NFTs” (Pinto-Gutiérrez, C. et al (2022)). VARs are statistical models which are used for multivariate time series analysis, i.e., each variable is a linear combination of past values of itself and the past values of other variables in the system too. This method can capture the relationships between the multiple quantities that are studied. Furthermore, they “used wavelet coherence analysis to find that investors are more attracted to NFTs after increases in both Bitcoin and Ether returns” (Pinto-Gutiérrez, C. et al (2022)). Their findings are consistent with the idea that the hype and popularity surrounding cryptocurrencies “induced by record-high prices in 2021 could explain the NFT growth in popularity during the same period” (Pinto-Gutiérrez, C. et al (2022)).

Interestingly, PWC found that there is an “intersection between NFTs and Decentralised Finance (‘DeFi’). DeFi defines some financial applications built on a blockchain to disintermediate centralised exchanges and traditional financial services” (PWC, (2022)). The observed growth of the market for NFTs has led to the “‘mooning’ of generative pieces of art, meaning that they have increased in price to such an extent, that they have become a person’s most valuable asset, even more valuable than one’s home” (PWC, (2022)). According to PWC, DeFi suggests a number of ways for NFT creators to monetise their assets without the requirement to sell. These include Fractionalisation, Collateralisation, and Creator Rewards. Firstly, “DeFi platforms can create liquidity by allowing the fractionalisation of certain digital assets by substituting the digital asset with a different pool of tokens that can then be traded on a secondary market” (PWC, (2022)). Fractionalisation helps smaller artists to access a ‘wider community’ if they had initially been “priced out of participating in the initial project” (PWC, (2022)). Collateralisation, according to PWC’s research, work by “following the same logic as collateral tokens, whereby NFTs can act as security to loan issuers, as they represent ownership of

certain assets and therefore have a recognisable value". NFTs can only be used as collateral once, which adds trust and transparency to the market. Additionally, "transparency and automation can decrease the cost of financing arrangements" (PWC, (2022)).

Finally, a more recent trend in the NFT space involves "rewarding holders of a project with a percentage of the fees earned from sales" (PWC, (2022)). Specific to NFTs is that secondary sales of the piece of art does not solely benefit the current owner, because the original creator is entitled to a percentage of the revenue received from future sales.

V. HOW ARE NFTS CREATED?

Non-Fungible Tokens can be created on, and uploaded to, different platforms, for example, Mintable, Rarible, and OpenSea among others. Roberts (2022) found that certain platforms will charge a small fee for the creation of an NFT, such as OpenSea, whereas others are free, for example, Rarible. It should be noted that creating an NFT is not a risk-free process, and several precautionary measures must be taken. Roberts (2022) suggests certain measures such as carrying out a "close assessment of exchange and storage techniques". Roberts determined that the first step in creating an NFT involves "configuring a wallet", which occurs after logging into the specific platform one wishes to use. Certain platforms will not require making an account, or registering, which facilitates an easier process. Roberts then suggests that the "NFT must then be connected to the wallet". This step "enables a user to develop a new bid, or token, or to interlink it to an existing NFT" (Roberts, C. (2022)). Uribe and Waters suggest that the best way to create the 'wallet' is to "apply the MetaMask option", this is a notion which Roberts supports in his study. Upon applying the MetaMask, the creator is given access to "unlimited options to develop digital objects, i.e., NFTs (Roberts, C. (2022)). These can take the form of drawings, photos, songs, etc. The creator is advised to note that it is necessary to ensure that the NFT created will not violate copyright laws.

OpenSea offer users an easy-to-follow step-by-step guide on creating a space to sell an NFT. See image below.

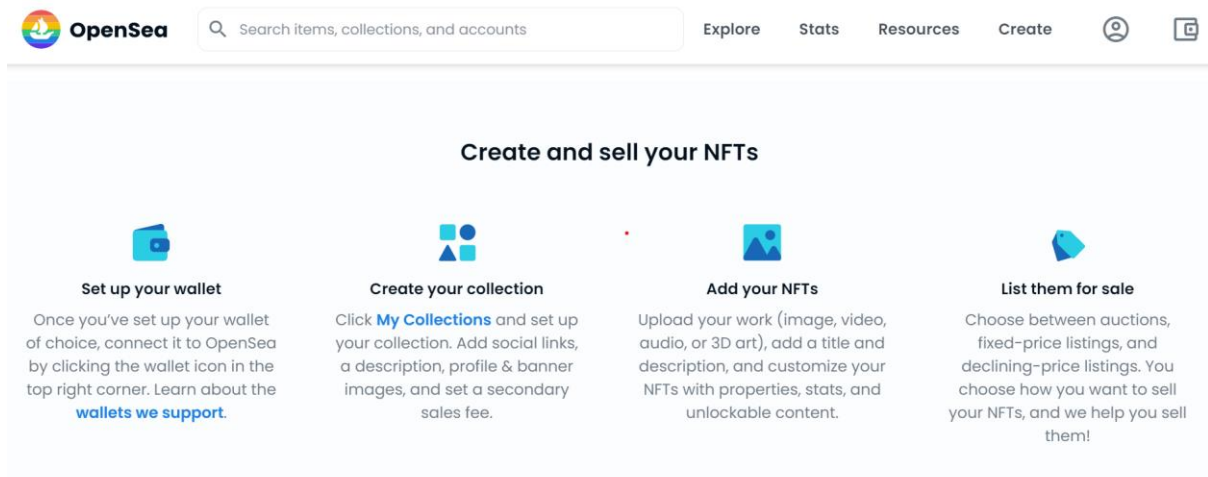


Figure 4: Creating and Selling NFTs (Source: OpenSea, (n.d.)).

The process is quite simple, with only a couple of steps to follow. As previously mentioned, once the wallet is created, the user can add their NFT to their profile in order to put them up for sale. Once this is completed, the user must then wait for an offer to be made on the NFT. The crypto wallet stores the individuals “method of payment and allows the individual to access the new NFT” (OpenSea, (n.d.)). The wallet allows the individual to “purchase, send, and receive NFTs, as well as to interact with blockchain-integrated websites” (OpenSea, (n.d.)). The aforementioned MetaMask is a popular crypto wallet. The process for setting up a MetaMask includes visiting the MetaMask website at <https://metamask.io/download/>, and choosing your application, e.g., Google Chrome and installing the MetaMask. Afterwards, the individual must create an account, which involves creating a profile and setting a password. Finally, the user should visit their desired marketplace, such as OpenSea, and then click on the wallet icon on the home page and select MetaMask from the dropdown menu.

Multiple other marketplaces offer tutorials on creating, writing, and deploying NFTs, with further tutorials for minting the NFT, and viewing the NFT in the digital wallet. Ethereum offers several in-depth tutorials, which can be found at Ethereum.org, but will not be included in this research paper due to its lack of relevance to the research problem in question, which relates to accounting for art NFTs.

VI. NFTS AND ART

Non-Fungible Tokens have many uses, yet the most popular seems to be art, and more specifically generative art. Generative art simply refers to art that is generated algorithmically. With more and

more art being sold digitally as NFTs, it is an area that requires some examination. There are a number of platforms available for NFT creators, the most popular being 'Art Blocks'. Art Blocks was the first platform of this kind to be developed and allows for programmable content to be stored on the Ethereum Blockchain. NFT creators can create their own original artwork on the platform, which can then be sold to generate income. Other platforms of this nature include 'Profile Picture' or 'PFP' and 'Crypto Punks'. These new processes are revolutionary for artists and content creators of both physical and digital art.

In terms of physical art, the traditional approach for "the proof of authenticity involves the participation of various experts which is both time consuming and costly" (PWC, (2022)). According to PWC, with the novel use of blockchain for this purpose, the process becomes more transparent and "allows investors to trace transactions of NFTs, associated with a specific piece of art, to the original creator in order to verify ownership" (PWC, (2022)), a benefit largely appreciated by the purchaser of an NFT. Further, this "tokenisation of such assets can evolve the way that the market functions. For example, smart contracts linked to NFTs may include clauses with regards to the percentage of royalties that will be paid to the original creator's account from every transaction, ensuring that artists are treated and compensated fairly". This completely transforms the way in which physical art has traditionally been dealt for years, yet it also creates various advantages for two of the key players: creator and holder.

Likewise, NFTs have changed the art industry with regards to the creation of digital art. Due to the high popularity of NFT trading platforms, artists, particularly smaller artists, have access to a far larger audience than what was previously possible. Research performed by PWC found that when these artists, "finds a person who is willing to pay the desired price, the NFT is transferred to the buyer. Meanwhile, the funds paid (or a portion thereof) by the buyer of the art piece can go to the creator initially without splitting large portions of the profits with other intermediaries" (PWC, (2022)). As previously mentioned, NFTs give artists the opportunity to connect with ease with their audiences as there is no requirement for a third party. "Even if the piece of art is sold after many years, with NFTs, a payment can be paid to the original creator of the NFT in perpetuity. Additionally, given that an NFT gives the ability to track the use and ownership of the NFT through its entire lifecycle, it gives the creator to continually engage the owner through the provision of additional content post-sale" (PWC, (2022)). Opportunities such as these were never possible before the use of NFTs and these digital art trading platforms.

VII. LEGAL AND REGULATORY CONCEPTS RELATING TO NFTS

The use of fungible tokens, such as Bitcoin, has led to the development and adaption of a number of legal and regulatory mandates worldwide. However, since non-fungible tokens are a relatively new phenomenon in comparison to cryptocurrencies, there has been less development in the legal and regulatory area surrounding their creation, purchase, and use. An area to note is that of artists and creators protecting themselves in terms of copyright issues. Another area of importance in this domain are the laws surrounding intellectual property, and financial regulation.

A. Intellectual Property Rights

Intellectual Property (IP) Rights are significant for the creators of NFTs, who wish to protect their unique creations. It would seem appropriate that because NFTs are non-fungible in nature, that they would be “seen as a unique solution to protect IP rights”, and this is seen in the issuance of certifications, titles of ownership, and viral passports, which aids the development of a marketplace where the authenticity of goods can be better guaranteed and IP rights better controlled” (PWC, (2022)). Despite this, the original creator of the NFT should enforce practices to ensure that their IP rights will be respected, for example, filing a patent of the NFT in question to avoid the possibility of other creators copying their work. Furthermore, in terms of copyrights, “NFTs are created on blockchains that support smart contract programming. As such, NFTs can be protected by software copyright depending on the jurisdiction. When the NFT is only a proof of ownership or title pointing at a real-world asset, this proof cannot be altered, thereby providing protection to its legal owner. When licensing or transferring copyrighted material, NFTs can be used to distribute rights in a compliant and transparent manner by bringing certainty as to the author, owner, and licensee” (PWC, (2022)). PWC carried out further research surrounding trademarks and NFTs. Their research found that when the origin of the NFT is known to the participants, it can be used “in connection with trademarks to enhance legal protection” (PWC, (2022)).

B. Copyright

A further study carried out by Noh, Odenkirk, and Shionoiri considers issues surrounding copyright and NFTs. In the United States, “the 1976 Copyright Act, and related case law remains the applicable framework to understand the exclusive copyright interests afforded to creators of digital artworks associated with NFTs (as well as to the creators of the code which comprises the actual tokens themselves)” (Noh, M.E., Odenkirk, S.C. and Shionoiri, Y. (2022)). This Act defines copyright protection as ‘*original works of authorship fixed in any tangible medium of expression ... from which they can be perceived, reproduced, or otherwise communicated, either directly with, or with the aid of a machine or device*’ (17 U.S.C. § 102.)” (Noh, M.E., Odenkirk, S.C. and Shionoiri, Y. (2022)).

Similarly, countries in the European Union offer copyright protection too. When an individual creates an “original literary, scientific, and artistic work, such as poems, articles, films, songs, or sculptures, the individual is protected by copyright” (Europa (2021)). Copyright laws in the European Union include:

- “Economic Rights: Guaranteeing control over one’s own work and remuneration received as a result of its use through selling or licensing, and
- Moral Rights: Protecting the rights to claim authorship (Right of Attribution), and to refuse modification of the work (Right of Integrity)” (Europa (2021)).

Therefore, the digital artwork, in the form of a token, can be protected under copyright, provided the original work is authentic, and can be genuinely verified that the specified creator is the original artist.

Additionally, Noh, Odenkirk, and Shionoiri found that “the transfer of ownership of a copy of a copyrighted work (or of a token granting rights therein) will not, in the absence of a written agreement, transfer copyright in the underlying work to the buyer—similar to the traditional art market, the default statutory position for tokenised artworks is that the creator retains copyright in any creative work linked to an NFT” (Noh, M.E., Odenkirk, S.C. and Shionoiri, Y. (2022)). Although this is the law, problems inevitably arise with malicious users attempting to copy art NFTs or scamming links associated with NFTs.

Furthermore, NFT “projects raise the question of who owns the copyright, as they rely on algorithms to randomly generate unique outputs” (Noh, M.E., Odenkirk, S.C. and Shionoiri, Y. (2022)). For example, the platform ‘Art Blocks’ is an “Ethereum-based platform which provides on-demand generative NFT artwork. When a buyer mints a piece of art, they receive a token which generates an artistic output based on the original code of the artist. This results in a combination of specific traits like colour and shape. The artwork itself, here, is tangible, as generative artwork is a tangible medium. The question that can be raised is whether the original artist who created the algorithm can claim the resulting piece of art, or whether the algorithm itself can claim ownership” (Noh, M.E., Odenkirk, S.C. and Shionoiri, Y. (2022)). Due to the fact that NFTs have only truly become mainstream in the last year, this is an issue which is yet to be addressed by lawmakers. It is an area that requires further research, as it raises a number of questions for both artists and creators of NFTs.

C. Legal and Regulatory Challenges

Although there are a number of positive items to note in terms of protecting IP rights of creators, NFTs pose certain challenges in this regard also. Through PWCs extensive research about NFTs, it has

been found that they “bear many risks, as does any digital asset, such as security breaches, theft, loss of a private key, etc.”, which must be considered by the creator of an NFT when choosing to sell it.

According to PWC, ensuring the existence of “a robust and comprehensive agreement” is necessary for adequate protection of these IP rights. For example, it can be “contractually agreed to sell an NFT ‘naked’, i.e., without the attachment of IP rights, where the creator ensures the retention of a part of the value derived from the creation of the NFT” (PWC, (2022)). Essentially, the creator can draft the terms of the contract with the intention of determining the rights (s)he is entitled to after its sale. These contractual terms can also be written to prevent the holder of the NFT from selling copies of the artwork, for example, or partaking in other commercially exploitative actions which would have a negative impact for the creator of the NFT. PWC also determined some other “contractual aspects to consider including such as a limitation of liability clause, dispute resolution methods, as well as the applicable law and governing jurisdiction” (PWC (2022)).

According to Roberts (2022), “there are several methods to secure ownership rights for NFTs. For instance, there are certain legal aspects that have been set aside for creating tokens”. Artists who create art in the form of NFTs are subject to creation jurisdiction, and so the ownership rights arise from NFT creators’ legal position. “The right to develop NFTs majorly vests itself in legal ownership of underlying assets” (Roberts, C. (2022)). Nevertheless, conflicts may occur as a result of “unclear ownership structures or multiple owners owning similar objects. In addition, piracy issues can obstruct ownership rights” (Roberts, C. (2022)). There are other ownership rights too, which are the collector’s rights. These are the rights that the buyer of an NFT is entitled to. According to Roberts, these are usually “predetermined by the focus on ownership pride” (Roberts, C. (2022)).

VIII. BLOCKCHAIN, NFTs, AND THE EFFECTS ON ACCOUNTING SYSTEMS

The accounting profession has undergone dramatic changes in recent years, particularly with the digitalisation of accounting processes. Blockchain has been a key leader in this transformation. The Australian Accounting Review researched blockchain as a “database engine in the accounting system” (Seng Tan, B and Yew Low, K. (2019)). This review argues that blockchain will play a transformative role in the accounting profession, because “transactions recorded on a blockchain can be aggregated into financial statements and can be confirmed as true and accurate” (Seng Tan, B and Yew Low, K. (2019)). The idea proposed is that blockchain technology affects the “database engine of an Accounting Information System (AIS) through the digitalisation of the current paper-based validation process” (Seng Tan, B and Yew Low, K. (2019)). The shift to becoming paperless has been a notable change within the accounting profession for a number of years, with more and more companies choosing to

store information on the cloud, or on different software. The next step in this evolution may very well involve the introduction of using blockchain technology to further simplify and digitalise accounting processes. “In a blockchain-based AIS, accountants will no longer be the central figure, but will remain the preparer of the statements as is required by regulation” (Seng Tan, B and Yew Low, K. (2019)). Therefore, despite a technological move, the accountant will remain a key figure. Digitalisation reduces the risk of human error, and “immutability of blockchain data reduces the incentive for fraud”, improving accounting and audit quality (Seng Tan, B and Yew Low, K. (2019)).

A. Blockchain Database Applications for Accounting

The Australian Accounting Review defines a database application as a “software application that provides information based on users’ queries of the data stored in a database(s), and an AIS is simply a specialised database application” (Seng Tan, B and Yew Low, K. (2019)). Although this sounds quite complex, many companies choose to employ a multi-tier structure, in order to effectively manage data. This allows for the efficient separation of data, so that each tier focuses on specific information or aspects of the process, making the data more manageable. “Theoretical analysis since the late 1990s shows that the separation of concern in a multitier architecture provides several benefits such as reduced complexity, improved reusability, and simpler software evolution (Tarr et al. 1999). When concerns are well separated, sections of codes can be reused, developed, and updated independently” (Seng Tan, B and Yew Low, K. (2019)).

The suggestion here is to implement a three-tier approach, where “a component in one of the middle tiers is a client to the next lower tier, while at the same time is a client to the next highest tier”, thus, despite each tier being separate, or “self-contained”, they are each required for the database to function adequately (Seng Tan, B and Yew Low, K. (2019)). The three tiers, in ascending order are: “data management, application tier (to transform data to information), and the presentation tier (provides interface functionality)” (Seng Tan, B and Yew Low, K. (2019)). Each layer performs a different task, yet they are all necessary.

In terms of using blockchain within the accounting profession, the three tiers play significant roles, yet have different effects on the content of the financial statements in question. For example, “the presentation tier would be used for workflow, but doesn’t directly affect the content, while the application and database management tiers directly impact on the preparation and processes” (Seng Tan, B and Yew Low, K. (2019)). The way in which this system can be used at the different tiers within the accounting profession include the following: “at the application tier, reports are generated by querying one or more databases including generating calculated values (such as averages and totals)

that meet some selection criteria (such as date range and groupings). Reusable query templates for common and frequently used reports are often built into an AIS. For example, income statements can be generated periodically by changing the date range before running the query” (Seng Tan, B and Yew Low, K. (2019)).

There are many notable advantages to implementing a system such as this, most specifically, validity of the reports produced. Normally, a “central authority verifies that the required validations are in order, followed by the authority. This can expose a target for a security breach as this central authority can become compromised by hacking, phishing, and corruption” (Seng Tan, B and Yew Low, K. (2019)). These risks no longer exist when using a blockchain system, as there is “no central authority, and it relies instead on other mechanisms, such as a closed and identified group of validators, i.e., a private blockchain, to ensure reliability” (Seng Tan, B and Yew Low, K. (2019)). A private blockchain adds “trust and security, as malicious validators can be persecuted and expelled from the network” (Seng Tan, B and Yew Low, K. (2019)).

Seng Tan and Yew Lok concluded that a “blockchain-based AIS will change how accounting is performed and will improve the reliability of required accounting data for the preparation of the financial statements”.

Continuing with the digitalisation of the accounting profession, it leads us to the question of the treatment of digital assets in the financial statements, i.e., NFTs. Given the vast landscape of NFTs, companies wishing to “explore its potential should equip themselves with as much market knowledge prior to entering this space, in terms of identifying the key players, the popularity drivers, and the numerous opportunities within the value chain of the NFT ecosystem” (PWC (2022)). Additionally, companies should “assess their operational capabilities, and legal and tax implications that relate to issuance, ownership and transfer of NFTs” (PWC, (2022)). These are necessary steps to ensure that the company has the capacity and ability to consider and to respect the requirements and due diligence required when working with NFTs.

As is the case with all types of digital assets, NFTs can come in different forms, such as collectibles, sport, art, etc. Following this, the “accounting considerations then vary depending on the rights and obligations and the commercial substance. These considerations also vary depending on whether the holder or the creator” of the NFT is the stakeholder in question (PWC, (2022)).

B. Accounting Considerations for the Holder of an NFT

The first scenario involves the holder of the NFT. “Depending on the rights and obligations and commercial substance, an NFT could be accounted for by a holder as an Intangible Asset, Financial Asset, Inventory, or an IP Licensing Arrangement” (PWC, (2022)). As previously established, ownership rights are a fundamental aspect to NFTs, and so, “if an NFT gives the holder ownership rights over a piece of art, then it would likely be considered as an Intangible Asset” (PWC, (2022)), but it is crucial to note that the terms and conditions of the NFT are “critical in assessing what kind of rights are conveyed and accordingly what kind of asset (if any) may be recorded” (PWC, (2022)). Additionally, the impact of contractual restrictions must be considered, for example, copyright, patents, and/or reproduction of the NFT in question, as this can influence the treatment of the NFT in the financial statements. While NFTs are non-fungible by definition, “the practical ability to recreate may also need to be considered in assessing the true value of the NFT under consideration. In certain instances, purchases of an NFT may provide rights to the NFT (i.e., blockchain record), but might not necessarily provide the buyer with intellectual property rights (e.g., rights to restrict the use or reproduction of the artwork)” (PWC, (2022)).

C. Accounting Considerations for the Issuer of an NFT

From the perspective of the issuer, there are several different areas to assess in terms of the correct accounting treatment for the NFT in question. It is crucial to “identify what has been sold. For example, is the issuer giving up control over an asset it previously controlled and recognised on its balance sheet, or is it merely giving away certain rights to use certain intellectual property, brand name, or other intangibles in return for consideration?” (PWC, (2022)). The characteristics of the consideration, i.e., fixed or variable, must be examined as this will affect how the NFT is treated in the accounts. Moreover, it must be “considered whether the entity is required to store/host the underlying NFT or provide other goods or ongoing services, as this establishes what accounting standards to apply, and in many cases, guidance on revenue recognition might need to be considered” (PWC, (2022)).

IX. NFTS AND TAXATION

To advance from the appropriate treatment of NFTs in terms of accounting, there are also different taxation implications to consider when using NFTs. The specific tax implications depend on several factors such as “the business model, the nature of the transactions, and in many jurisdictions, the accounting treatment” (PWC, (2022)). Again, the different actors involved are likely to have different taxation consequences.

Typically, as the creator of an NFT, there will be two income streams subject to income tax, or corporation tax when a considering companies: “(i) net sales receipts from the initial buyer of the NFT; and (ii) perpetual future income from subsequent resales” (PWC, (2022)). Income tax charged depends on the jurisdiction, i.e., the place in which the creator is located. PWC explored the possibility that these income streams may be subject to tax (“collected either via withholding at source or through a requirement to remit tax) in another jurisdiction” too. This is a complex situation which gives rise to a number of issues, for example, if the “characterisation of the income to the creator (both on minting and secondary sales) is not clear in certain jurisdictions and may be subject to different characterisation in different jurisdictions” (PWC, (2022)). PWC have suggested that this is further influenced by the “legal rights and obligations created by the NFT, the relevant legal protections relating to the underlying asset, and the characterisation principles used by the relevant jurisdiction”. Certain jurisdictions may not apply withholding tax to the NFT, so the scope of withholding tax may need to be examined further in order to determine whether or not the income received from NFT sales is subject to this tax or not. Further, it is questionable whether NFTs are subject to indirect taxes, such as VAT, or not. As NFTs have only recently grown sizeably in popularity, it is an area which may need further analysis in order to determine exactly which direct and indirect taxes are required to be paid.

As an initial buyer or secondary buyer of an NFT, the “consideration used is typically a cryptocurrency” (PWC, (2022)), such as Bitcoin. “Many jurisdictions regard cryptocurrency as property as opposed to a fiat equivalent, such that any gain realised from the exchange of that cryptocurrency with another asset, i.e., the NFT, is taxable” (PWC, (2022)). Depending on the location, this can be treated as either capital gains, or trading gains, where there are typically different tax considerations.

PWC raises a number of questions surrounding the taxation implications associated with NFTs, many of which are jurisdiction dependent. The implication of this is that different taxation laws may apply in different locations, reducing the standardisation of the treatment of NFTs. Without a standardised tax system, it can be confusing for sellers and purchasers of NFTs. Similarly, a deeper analysis of the direct and indirect taxes which NFTs are subject to is required, in order to ensure that the correct amount of tax is being paid on a consistent basis.

X. ART AS AN ASSET CLASS

Different studies suggest that art should be considered as an ‘Asset Class’ and should take its place alongside “traditional asset classes such as bonds, equities, real estate, and gold” (Picinati di Torcello, A (Deloitte)(2010)). This is particularly relevant to this research as NFTs play a prominent role in the art market, with more and more pieces of art being sold digitally, in the form of NFTs. Typically, art

acquisitions have some defining characteristics: they are a “high-risk investment, illiquid, opaque, unregulated, have high transaction costs, and are at the mercy of erratic public taste and short-lived trends” (Picinati di Torcello, A (Deloitte)(2010)). Similarly, research carried out by Mamarbachi, R, et al. (2020) supports the idea of considering art as an investment asset, and confirm the specific features of the art market, describing it as being “volatile, irrational and illiquid”, which makes it difficult “to compare to more conventional investments”, yet its “low correlation with the equities market, and desirable risk and reward ratio, as price appreciation defies all logic, it is an attractive investment”. As was previously established, the role of art is changing rapidly with new changes in the market, particularly in the digital context, but also in the traditional context, with the industry having a value of “over \$3 trillion and an annual turnover of \$30 billion” (Mamarbachi, R, et al. (2020)). Art is no longer just “appreciated for its aesthetic value and the expression of its lofty ideals, but as an investment, and has become one of the newer ‘must-have’ investments” (Mamarbachi, R, et al. (2020)). Notably, Picinati di Torcello, A. (2010) points out that there has been a development within the financial industry, with individuals expressing more of an interest in pieces of art. While there has been a relationship between “art and finance for centuries, art services now exist among financial institutions and small financial boutiques” (Picinati di Torcello, A (Deloitte)(2010)). Typically, these services are advisory, and tend to “complement the traditional range of private banking services to provide ‘non-financial lifestyle services’ in order to offer a holistic approach to wealth management” (Picinati di Torcello, A (Deloitte)(2010)). Deloitte, as a global leader in both consulting, and financial advisory services, among other services, have defined a number of art advisory services that exist, for those wishing to invest in art. These consist of:

- Art Research: This process involves determining the authenticity of the piece of art, which can be achieved through “art historical analyses, sourcing information on the art market, and performing price research” (Picinati di Torcello, A (Deloitte)(2010)),
- Art Transactions: Transactions such as the purchase and sale of pieces of art are analysed, and can be used as a way of representing interests (Picinati di Torcello, A (Deloitte)(2010)),
- Art Management: Management of art includes the valuation of the art, researching the available insurance policies that can be used, determining how to store and transfer the art, and collection advisory and management of the art (Picinati di Torcello, A (Deloitte)(2010)).
- Structured Solutions: Solutions for inheritance are planned, while other aspects such as art foundations and trusts, and philanthropy are researched (Picinati di Torcello, A (Deloitte)(2010)).
- Art Lending: This involves organising the portions of private or corporate collections to lend. This is an area which hasn’t been developed hugely within the financial sector. Yet the main

“services include Term Loans (to borrow against art), Acquisition Financing, Revolving Lines of Credit, Dealer Inventory Financing, Bridging Loans, Advances and Auction Guarantees, and finally, Arranging Loans to Museums and Exhibitions” (Picinati di Torcello, A (Deloitte)(2010)).

These investment services are in more frequent use due to the “growing recognition of art as a new alternative asset class and supports the development of art investment products, the role of art to positively diversify investment portfolios and the integration of art into wealth portfolio analysis” (Picinati di Torcello, A (Deloitte)(2010)).

Considerable research took place to support the contention that art should be considered as an asset class, which in turn has an affect on the way in which it is treated in the financial statements. For example, Deloitte posed three questions, and proposed the answers to these questions, which explain why art is an asset class. These questions were “1. What are the structuring variables of fine art markets? 2. What is the financial performance of fine art markets? And 3. How to value fine arts?” (Picinati di Torcello, A (Deloitte)(2010)).

In order to answer the question relating to the structuring variables of fine art markets, Deloitte proposed a number of macro-economic trends which support the idea that the “conjunction of economic, social, and technological factors have led to continuous growth of the fine art markets” (Picinati di Torcello, A (Deloitte)(2010)). Mentioned below are some of these key factors:

- Specifically in emerging countries, there has been a notable worldwide increase in prosperity. Deloitte believe that “once a nation grows richer and its citizens reach a certain level of affluence, they start to buy art, which has been the general financial trend since the beginning of the industrial age” (Picinati di Torcello, A (Deloitte)(2010)).
- “Art markets have become more transparent due to research in finance and economics as well as data dissemination” (Picinati di Torcello, A (Deloitte)(2010)).
- “As more and more countries are becoming wealthier, there are more artists and an increased interest in art from a larger community” (Picinati di Torcello, A (Deloitte)(2010)). This is an area of significant interest for this research, as not only are there more artists and an increased interest in art, but there is also a new art form, i.e., digital art in the form of NFTs. As was previously established in this paper, artists have access to larger audiences as artists can share their work worldwide online.
- “The proportion of all luxury spending on art will continue to increase as investors look for assets that would retain their value in the longer term especially in a period of economic uncertainty” (Picinati di Torcello, A (Deloitte)(2010)). This aspect of the traditional market raises questions surrounding digital artwork in the form of NFTs retaining their value. As a

relatively new concept, it is unclear yet as to whether or not their value will increase or decrease over time, with similar questions being raised regarding whether or not NFTs are simply just a phase and will phase out over time. Despite this, in 2010, around “80% of auction transactions were estimated to be below €10,000 which opens the door for many newcomers” (Picinati di Torcello, A (Deloitte)(2010)), suggesting that NFTs may have a prominent role for more years to come.

Additionally, other trends such as “social macro trends also support the expansion of the art markets. In an era, which is strongly characterised by the globalisation of cultural activities, a larger interest is created in art to unprecedented levels” (Picinati di Torcello, A (Deloitte)(2010)). Further, technological advances strongly support the idea that art should be considered as an asset class. Technology can increase transparency “as new market opportunities and business models in an internet and digital world emerge, such as online auction houses, online databases, online and real time market data dissemination, online catalogues, and fairs, artis websites, new communication channels” (Picinati di Torcello, A (Deloitte)(2010)), and now NFTs. As art is becoming more accessible to the masses through these digital evolutions, art pieces and valuable collectibles are available with more ease to more people. Similarly, the concept of ‘collectibles’ exists within the arts market, a topic which is topical in the world of NFTs. Individuals have the possibility to include these types of investments into their portfolios in both the traditional art market and the market for art NFTs.

To address the second question proposed by Deloitte regarding the financial performance of fine art markets, they begin by establishing that “performance analyses of the art markets have been conducted for more than 30 years” (Picinati di Torcello, A (Deloitte)(2010)), at the time of writing. By now, it can be said that such performance analyses have been carried out for over 40 years. Analyses of this nature can determine different trends within a market. For example, “a study carried out by Wolfgang Wilke from Dresdner Bank in 2000 found that the long-term trend in inflation adjusted for art prices follows the general economic trend, i.e., art prices rise above average compared to the prices of other goods” (Picinati di Torcello, A (Deloitte)(2010)). It was also found that an “economic slowdown leads at least to a drop in demand and an increase in supply due to, *inter alia*, forced selling” (Picinati di Torcello, A (Deloitte)(2010)). This rarely applies to all artwork in the top price category since “wealthy individuals have a substantial purchasing power even in bad economic times” (Picinati di Torcello, A (Deloitte)(2010)). Therefore, it can be said that the “distribution of income and wealth plays a key role in assessing the price sensitivity of the individual sectors of the art market” (Picinati di Torcello, A (Deloitte)(2010)). Additionally, Mamarbachi, R, et al. (2020), suggests that the relationship between “supply and demand for art is very similar to that of luxury goods” which confirms the research carried out by Deloitte. Due to the limited supply of fine art, “it gives art a higher value”, and

with “exclusivity comes higher prices, thus affecting the demand curve” (Mamarbachi, R, et al. (2020)). As both Deloitte and Mamarbachi et al discuss the price sensitivity of art, a number of indicators are identified suggesting that the aforementioned demand curve is an inelastic one. These indicators include that the demand curve is affected by “changes in taste, changes in income, pricing and accessibility, and the threat of substitutes” (Mamarbachi, R, et al. (2020)). A threat of substitutes opens up a large opportunity for NFTs within this market, all while making art more accessible. Therefore, NFTs significantly affect two aspects of the definition of an inelastic demand curve. As a result, NFTs could be considered a threat to the traditional art market, or an opportunity for those with less access to art.

A further method to facilitate measuring and tracking the performance of art markets is through art indices. Several “researchers and private companies who publish such indices have found valuable results” (Picinati di Torcello, A (Deloitte)(2010)) from this method of analysis. In 2010, “32 indices were accessible on Bloomberg, which monitored historical performance, and found that paintings generate moderate positive real returns that have a low correlation with the return on stocks and treasury bonds” (Picinati di Torcello, A (Deloitte)(2010)), which makes it an attractive investment to include in a portfolio as it also increases diversification of the portfolio (Artvest 2010) (Barclays Equity Gilt Study 2005) (Picinati di Torcello, A (Deloitte)(2010)). To put figures to this analysis, at the time that the research was carried out, it was found that “stocks outperformed art in the 25 years prior to 2010, with a CAR of 9.01% compared to 6.11% for the All-Art Index. However, for the 50 years prior to 2010, the returns were very close with art achieving a CAR of 9.06% compared to the 9.56% for equities” (Picinati di Torcello, A (Deloitte)(2010)). Similarly, Mamarbachi, R, et al. (2020), found that “indices tracking the performance of fine art have held up well in recent economic slowdown, with auction houses continuously reporting record prices”, thus highlighting the value that can be gained from these indices.

Whilst considering art as an investment, with the possibility of offering real positive returns, it must be noted that there are a number of potential drawbacks associated with the investment, for example:

- “Pieces of art are heterogeneous, i.e., each product is unique,
- Art markets are unregulated, i.e., there are no specific accounting standards which offer guidance on the treatment of art in a set of financial statements,
- No dividends or interest payments are made to the investor, yet according to Mamarbachi, R, et al. (2020) it is possible to earn “capital gains as an alternative to dividends”, and this is related to the fact that art doesn’t behave the same as other assets like real estate or bonds. So, despite the disadvantage of not receiving a dividend, an investor can still gain from

investing in art through capital gains. Such a gain, unlike a dividend, will only arise in the event of a sale of the art,

- Art is not highly liquid, but this can be the case for other asset classes like private equity,
- Substantially more time needs to be spent to acquire specialised knowledge to be successful with fine art investments than with traditional financial investments,
- Higher transaction costs should be expected with fine art investments, especially at the high end of the market which makes art a difficult asset for short term trading, and
- The risks of fraud and/or forgery exist” (Picinati di Torcello, A (Deloitte)(2010)).

Despite these drawbacks, art can also offer some financial benefits:

- “Art can hedge against inflation and currency devaluation,
- The risk of losing your principal investment is low, provided you invest wisely,
- There is no requirement for a minimum investment,
- One can benefit from favourable tax treatment for art,
- Risk is reduced due to its low correlation with other financial assets, a notion supported by other researchers, such as Mamarbachi, R, et al., who in 2020 confirmed this idea in stating that “traditional assets are homogenous commodities that cannot be differentiated, as they are the same value per stock per company”. This can reduce diversification possibilities over time, as other asset types such as bonds, and stocks offer these possibilities, yet they also suggest that because “art is riskier than these stocks, bonds and securities, they in theory generate higher returns for investors” Mamarbachi, R, et al. (2020),
- It is possible to increase the revenue received from a piece of art by engaging in different lending opportunities for events and exhibitions, or meetings of experts,
- Any geographical risk does not exist as art can be transported easily within countries, or internationally, and
- Art can be insured against calamity risk” (Picinati di Torcello, A (Deloitte)(2010)).

The third and final question is related to the valuing of art, a crucial element in all investments. As previously stated, there are currently no guidelines or standards that deal with valuing art. Consequently, there is a level of ambiguity surrounding its valuation. Questions can be asked about performance of the art, when “there is no transparent pricing mechanism commonly accepted” (Picinati di Torcello, A (Deloitte)(2010)). The research carried out by Deloitte states that “in finance, the price of a financial asset is determined by the market, an index, and some specific factors” (Picinati di Torcello, A (Deloitte)(2010)), and as such, the “fair price of a work of art is typically the result of a qualitative analysis provided by expert appraisers using relative valuation, i.e., by looking at how similar assets are priced in the market, and at a combination of qualitative aspects of the work of art,

such as the scarcity of the supply, consumption utility, and individual perceptions” (Picinati di Torcello, A (Deloitte)(2010)). Although this is a fair way to value a piece of art, it should be noted however, that because there is no common method to value the art, it cannot be said with certainty that this method is as accurate as can be, as perceptions can change between countries. In contrast to this valuation method proposed by Deloitte, Mamarbachi, R, et al. (2020) propose other factors affecting the pricing of art, which they divided into four groups:

“(1) The Work of Art: which includes information regarding the quality, content, techniques used, size and authenticity of the art,

(2) The Artist: which includes the name and fame of the artist, and previous valuations,

(3) The Market: which includes rarity of the work, legitimisation, and reputation. Customers rely on the opinions of experts to conclude whether or not the price is correct, and

(4) The Macroenvironment: which includes the current economic state, which affects the art market” (Mamarbachi, R, et al. (2020)).

In addition, Mamarbachi, R, et al. (2020) propose two types of costs affecting the price: “production costs and selling costs”, from previous research carried out in 1999 by Jyrämä (Mamarbachi, R, et al. (2020)), which should also be considered in the valuation process. Studies relating to art as an investment asset, such as that by Mamarbachi, R, et al. (2020), support the notion that valuing art as an asset poses some difficulties, considering that art does not “generate an income stream, i.e., dividends, the ability to assess the value by calculating future cash returns based on estimating future inflation and interest rates cannot be used, and instead suggest a “bet on the price appreciation of something whose values defies financial logic”.

A common framework would assist to standardise this process, ensuring each investor and seller is likely to receive a fair price for the piece of art in question, and to facilitate the valuation process for those involved.

PART 2
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RESEARCH CHALLENGE

CHAPTER 2 - RESEARCH CHALLENGE

This paper addresses the issue of accounting for artwork which in recent years has presented itself in the form of NFTs.

Initially, the paper examines the current guidelines for the treatment of art in financial statements and moves on to consider the possible modifications of these guidelines to ensure these are of relevance to include NFTs.

I. ACCOUNTING FOR ART UNDER EXISTING STANDARDS

Currently, there are minimal standards and guidelines surrounding the treatment of NFTs in Financial Statements. At present, the accounting treatment is “perceived by investors, particularly those having industry understanding, as being very archaic – not to say even primitive” (IFRS Consulting (2022)). Previously, this paper confirmed that there are also no current accounting standards to treat art as an investment, further suggesting that there is a definite need to address a significant lack of guidance in this area.

In an attempt to obtain a greater understanding of accounting for art in the traditional sense, I conducted an interview with Ned Murphy, Managing Partner of Moore Ireland, Chartered Accountants. This interview established that there are a number of different ways to account for art in the Financial Statements. These findings are based on the accounting standards which are currently in place in Ireland (in 2022). According to Murphy, to accurately account for art within financial statements, it must first be established “whether the accounts are being compiled for an art dealer or trader, whether the art has been acquired for business purposes, or whether the art has been purchased as an investment”.

A. Accounting for Art if the Entity is an Art Dealer

Typically, if the entity, i.e., the company or sole trader is an art dealer, then the artwork acquired by them is part of their stock for trade and should be reflected in the balance sheet as such, i.e., stock. This is typically reflected in the balance sheet at a value based on the lower of cost or net realisable value. Any sales and purchases of art will be reflected in the financial statements in the same way as any routine trading items would be for a trading entity.

B. Accounting for Art for Business Purposes

The second situation involves acquiring artwork for business purposes. In certain instances, a business may acquire art for the purpose of displaying it in their business reception, walls, or similar. In this case, Ireland has specific rules for tax purposes, whereby such artwork, if displayed to the public in offices, can attract capital allowances for tax purposes. This allows the owner to obtain tax relief on the cost of the art over the tax life of the asset. In these situations, it is arguable that the artwork should be treated as a fixed asset in the form of fixtures and fittings and depreciated accordingly for the purposes of the financial statements.

C. Accounting for Art as an Investment

Finally, where an entity acquires art for the purpose of investment, there are no specific accounting standards or guidelines for this in Ireland at the present. One would expect that the asset would be treated as an investment asset and capitalised in the balance sheet at cost, i.e., shown as a tangible, investment asset. Any variations in valuation on an ongoing basis should then be reflected as unrealised gains or losses in the profit and loss account as the asset goes up or down in value.

The above three examples demonstrate the different interpretations as to how one should account for art. These three possibilities are only guidelines, without being directly stated by a standard, from a body such as IFRS or U.S. GAAP. So, therefore, if there are no specific standards addressing the treatment of art alone, then it further highlights the need for standards to include NFTs of art. I found that this is a clear and demonstratable gap in both literature and accounting guidelines which requires immediate action.

II. ACCOUNTING FOR NFTS

I propose to compare the accounting practices for art in the traditional sense with accounting for art as an NFT in the financial statements. IFRS consulting have released suggestions regarding the treatment of NFTs in financial statements.

NFTs are considered to be complex assets, and can fall under a number of headings, and so their research offered a greater insight into the most appropriate methods of treatment. To date, IFRS, U.S. GAAP, and bodies such as the FASB have neither suggested any plans, nor proposed any indicative guidance to businesses and other entities on accounting for NFTs.

IFRS Consulting has stated that the “entry of NFTs, which have significantly simplified investment and trade in intangible assets, has given rise to the need for an accounting standard covering all investment assets” (IFRS Consulting (2022)). As this is a time of increased use of crypto-assets, it is an apt opportunity for standard-setting boards such as the IASB and FASB to “publish a new accounting standard for investment assets whereby the assets will be measured at fair value through profit or loss, so long as it is possible to reliably measure their fair value” (IFRS Consulting (2022)). As a result, not only will there be a standardised process for the treatment of NFTs, but also for art as an investment, which has been determined as an essential requirement. The rapid development of NFTs has highlighted a lack of standards for their recording in financial statements. “Pursuant to the presently prevailing conservative interpretation of the accounting standards, both IFRS and U.S. GAAP, the dominant accounting classification of NFTs generally depends on the underlying asset, which is typically based on cost, which fails to capture the substance of the investment therein” (IFRS Consulting (2022)). At present, the treatment of NFTs as intangible assets is “based on the assumption that they do not meet the definition of financial assets since, on one hand, they do not possess a right to receive cash in the future, and, on the other hand, they are not equity instruments of another entity” (IFRS Consulting (2022)). This assumption has been refuted throughout the research carried out in this literature review, as it has been proved that the artists are entitled to receive future gains from future sales of their art NFT, underlining the need for standards to narrow their scope, and to address the importance of specific standards for these types of assets. The subject in question when discussing NFTs is that of tokens, and when these tokens have the “characteristics of a security, they could convey to their holders a right to receive cash or residual value” (IFRS Consulting (2022)). In accordance with accounting standards, if there is a “contractual right to receive cash or another financial asset is involved, this would clearly constitute a financial asset” (IFRS Consulting (2022)). Additionally, the token could convey an “equity right, or contractual right under the articles of association of the issuing company”, and therefore, the token, or NFT, would meet the requirements of a financial instrument (IFRS Consulting (2022)). IFRS Consulting identified that tokens considered to be securities, can at times constitute a debt instrument, or, at other times, an equity instrument.

However, if the NFT in question does not meet the definition of a financial asset, the current accounting standards encourage the treatment of the token as an intangible asset. IFRS define an intangible asset as “an identifiable non-monetary asset without physical substance” (IFRS Consulting (2022)). It is presumed that the requirements of this definition are met, but it must be noted that “the treatment as an intangible asset does not reflect the holding of these assets – both due to the significant volatility in their value, as well as owing to the nature of the holding thereof” (IFRS Consulting (2022)). IFRS Consulting found that this treatment is not relevant, as the basis for the

measurement of intangible assets using both IFRS and U.S. GAAP is cost, and “generally, the useful life of these assets, i.e., NFTs, is indefinite, and as a result, amortisation is not recorded in the statement of profit or loss” (IFRS Consulting (2022)).

NFTs can also fall under the heading of inventory, if under IFRS, the activities of the reporting entity are relevant to inventory. “To the extent broker-traders are involved, inventory is measured under IFRS at fair value less costs to sell” (IFRS Consulting (2022)). The idea here is that “this inventory was acquired principally with the purpose of selling it in the near future and generating a profit. This type of measurement can be observed in the financial statements of ‘The Bitcoin Fund’, for example” (IFRS Consulting (2022)).

According to IFRS Consulting, the increased use of these assets means that there is “now a combination of factors where standards which were not designed for this purpose are applied, together with a conservative interpretation of existing standards, preventing the entry of these assets into the definition of financial assets – which would lead them in the correct direction of measuring the assets at fair value through profit or loss and as a result, they would be reflected more accurately at their economic substance” (IFRS Consulting (2022)). There is belief that there has been greater development in accounting standards for physical assets, i.e., tangible assets, throughout the years compared to developments for intangible assets. The impact that the phenomenon that NFTs and token securities are having on standards is an issue that merits immediate addressing by relevant bodies.

Tokens and NFTs comprise a sector of the market, which is constantly growing and evolving, and whose uses are consistently increasing. It is a necessity that a solution is progressed in order to adapt standards to include treatment for these assets, or to develop specific standards which offer guidance on the area of NFTs. The “global accounting standards boards, i.e., the IASB and the FASB, must publish a standard which calls for measurement of the aforementioned assets” (IFRS Consulting (2022)). It should be noted that as these assets are often held for investment purposes, this standard may very well be applicable to other investment classes, such as the above-mentioned investment class of art.

The conclusion reached by IFRS Consulting is that “there should be no difference between an investment in land, gold, a cryptocurrency, an NFT, a painting, etc., if it was made for investment purposes, as opposed to for internal use” (IFRS Consulting (2022)). The increased popularity and use of NFTs has highlighted a need for advances in terms of an accounting standard which covers this type of asset. Similarly, the notion of pieces of art sold as NFTs also underlines the fact that more extensive guidelines should exist in terms of the correct recognition of these investment assets in the financial statements. The difficulty with the implementation of a new standard covering NFTs will be the

“measurement of fair value, but in some cases, there shouldn’t be a measurement challenge once an active market exists” (IFRS Consulting (2022)).

III. PROPOSALS

It has been established that the current accounting guidelines for the treatment of art in the financial statements are inadequate, and as a result, I will suggest a number of alternative methods which may be more appropriate to account for an art NFT in the financial statements.

A. Expand IAS 1 – Presentation of Financial Statements

IAS 1 is a standard which will require NFT stakeholders to report the relevant disclosures about the financial statements in which there is an NFT. These disclosures are required to comply with the relevant accounting standard, be it IAS, IFRS, or U.S. GAAP. Disclosing information regarding the financial position and performance which may have been affected by NFTs is a necessary note to include. Therefore, in order to consider these required disclosures, the IFRS standards must change in order to include information and guidelines on the appropriate treatment of NFTs in the financial statements.

B. Broaden the Scope of IAS 38 – Intangible Assets

A further suggestion involves broadening the scope of what constitutes an Intangible Asset, under IAS 38. At present, IAS 38 defines an intangible asset as an “identifiable non-monetary asset, without physical substance. Such an asset is identifiable when it is separable, or when it arises from contractual or other legal rights” (IFRS, (n.d.)). The standard sets out criteria which aid in identifying and measuring intangible assets. Under this standard, separable assets can be “sold or transferred” (IFRS (n.d.)), a requirement that NFTs meet. Currently, items such as computer software, patents, films, and copyrights are recognised as intangible assets. These items contain some similar features to that of NFTs, so this standard could easily be expanded to include NFTs. As a result, NFTs would appear in the balance sheet as long-term assets, at a value determined by the purchase price. The NFT would later be amortised to constantly reflect the accurate value in the financial statements.

C. Follow the Existing Guidelines for Physical Art

Another suggestion is to treat NFTs in a similar way as to how physical art is treated in the financial statements and follow similar guidelines.

Presently, if the entity preparing financial statements is an art dealer, there are several guidelines that are typically followed, without following a specific standard from a standard-setting body. One suggestion is that these guidelines could be followed by the creator of the NFT also, as they are technically the art dealer under the circumstances. Therefore, any sales made would be considered as revenue, and the resulting sale would reduce the amount of stock in the balance sheet, just as any other items would be in another trade. This would fall under IAS 2 – Inventories, which currently does not offer guidance on the treatment of NFTs as inventory in the balance sheet, another standard whose scope should be expanded.

Further, following the aforementioned guidelines for physical art, where the entity in question acquires the art NFT as an investment, it would be expected that the NFT would be treated as an investment asset, and then capitalised at cost in the balance sheet. Movements in value would be reflected in the financial statements in the form of unrealised gains or losses. This would mean that the NFT is recorded as an investment asset in the balance sheet. Sales of around \$70 million render NFTs an attractive investment opportunity, and in the coming years more of this may be seen. Therefore, adapting and adjusting standards concerned with investments, such as IAS 40, or IAS 28 could be considered a necessary step.

D. Valuation : For Accurate Measurement of NFTs in Financial Statements

Valuing NFTs can prove difficult due to several factors. Typically, because the NFT is traded on an online platform, a common means of payment is using cryptocurrencies, which can potentially raise problems. One such problem is the volatility of cryptocurrencies. Their value can change in an instant, and so the value of the asset is determined at the time of payment, at the current value of the cryptocurrency.

This process does not include any methods used in valuing traditional investments such as property, equipment, or artwork. Additionally, NFTs operate as a type of auction, which can often mean that a piece of art can be bought or sold for a price that is much higher than the actual value of the NFT. The bidding process can often lead to an inaccurate valuation of the asset in the financial statements.

Including NFTs in financial statements is necessary, as entities can hold these as assets. In order to be held at a correct value, the valuation process should be amended, and one possible solution is to

include NFTs under IAS 36 – Impairment of Assets. If required, this would involve reducing the value of the NFT in the financial statements to reflect the relevant decline in its market value. At present, NFTs are not mentioned under IAS 36, yet it would be appropriate to include them in order to have accurate valuations in the financial statements.

PART 3
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METHODOLOGY

CHAPTER 3 - METHODOLOGY

I. GENERAL RESEARCH QUESTION AND PROBLEM

The general question that this research aimed to answer is about art NFTs and accounting. The problem which was identified is that not only is there a lack of literature surrounding NFTs and accounting, but there is also a lack of guidelines and accounting standards. As the researcher, I put this down to the fact that NFTs only really rose in popularity last year, in 2021. Despite this, they have been around since 2014, and so there really is no excuse that accounting bodies have not yet released any guidelines or adapted any standards on how to treat the NFTs accurately and appropriately in the financial statements.

II. CASE SELECTION

The articles I chose to study all contained the common theme of NFTs, art, and accounting. These were selected based on the content, and the relevance of the content. I found it was quite easy to find articles about NFTs and their hype, but not so easy to source information about how to treat them in terms of accounting.

I found a number of studies from businesses extremely helpful, particularly those of Deloitte and PWC. I believe the reason they were so accurate is that as accounting firms, they are required to determine the best method to treat NFTs, particularly since they are becoming increasingly popular. As more and more entities begin to use NFTs, accounting firms will be required to have the knowledge surrounding their recognition and measurement in the accounts.

III. AS THE RESEARCHER

My role as the researcher involved gathering the information and data that I found most relevant to the research problem. The next step involved analysing the data and finding the most relevant pieces of information that I felt added value to my research. Not everything in every article or journal was necessary, and so it was important to be able to delete certain parts of the research. After this, the information was put together to complete a comprehensive study which will hopefully be able to influence other researchers in the future. Additionally, my research highlighted a gap in literature and accounting standards which I identified as an area that requires more attention from both researchers and accounting standard setting bodies.

IV. TYPE OF RESEARCH

The research applied in this paper was significantly based on a descriptive analysis of the existing literature surrounding this topic. The main research methods used included an analysis of existing literature, research into NFTs as artwork, and finally an interview.

As a relatively novel topic, sourcing data proved to be a difficult task, with a lot of the focus of existing literature being on fungible tokens, such as Bitcoin, which have existed for a longer length of time. I took a qualitative approach, as the larger part of my research was carried out by analysing data which was not numerical. Using this non-numerical data enabled me to analyse NFTs a lot better, in order to better understand the concepts and opinions around them, while also receiving information from past experiences, such as the first major NFT purchase made by MetaKovan. Qualitative research allowed me to derive truths from real-world settings such as business environments and contexts, which I found very helpful. The research completed by Deloitte and PWC that which I analysed and read really helped in this sense, as it put the practices into a real-life context which was extremely helpful.

Having conducted an interview as part of the methodology used in this paper, it enhanced the information and gave it a real-life, personal aspect to the research. It also enabled me to obtain a primary source of data, which is incredibly valuable to research, and also enhances the validity of the paper. The interview allowed for in-depth and detailed responses. Interviews are an effective form of research as they improve understanding of the topic in question while also exploring other individuals' opinions and experiences. The interview conducted used a qualitative research method, as again, it is a non-numerical method of research.

V. RESEARCH STRATEGY

The aim of a research strategy is to define the overall direction of the research. For this particular paper, the strategy involved researching NFTs per se, then analysing accounting for artwork, and then the impact of NFTs on the art market. The strategy highlighted the process by which the research was conducted which was via qualitative and empirical research which also involved an interview. Although the research was qualitative, there was also a descriptive element which involved describing NFTs as they are a relatively recent phenomenon.

VI. RESEARCH PHILOSOPHY

There are a number of different research philosophies associated with conducting research. These include Epistemology, Ontology, and Axiology. This particular research is best related to the epistemology philosophy. Epistemology takes the approach of influencing researchers in terms of framing their research in the attempt at discovering knowledge, and how this knowledge is acquired. This research was framed in such a way that involved analysing existing literature in order to acquire knowledge about NFTs, the art market, and finally, how to treat art in the financial statements.

Additionally, the research took a constructivist approach, which essentially means that truth is relative. A constructivist view believes that knowledge and reality do not have an absolute or single value or truth. By taking this approach, it meant that as the researcher, I was able to construct an outcome based on the analysis of the literature that I studied, and with the interactions that I had. These interactions include both the study of real-life business settings, learning about real-life NFT transactions, and also interacting with an accountant who understands the treatment of art in the financial statements. As the researcher, it was necessary to understand the complex nature of NFTs and their features, but also to do this from the point of view as not only the researcher, but as the preparer of the financial statements.

The constructivist approach fit my research strategy quite well, as it uses qualitative observations. In contrast, positivism is less appropriate, as it tends to focus on developing and testing hypotheses, with an emphasis on controlling and manipulating variables. Due to the research undertaken as part of this paper being of the descriptive and qualitative nature, this is not the approach to the research method that I took.

Constructivism also aims to understand phenomena, which is a term that accurately describes NFTs, '*phenomena*'. There is an element of understanding the processes involved in the phenomenon, which is an aspect of the research which was carried out in this paper. It can also be said that this paper took a phenomenological research approach, as a universal novel notion was analysed. The paper contains real-life experiences of the phenomenon that is NFTs, particularly the most known sale of Beeple's artwork to pseudonymous user MetaKovan.

Furthermore, the approach is inductive, as the paper aims to develop a new way of treating NFTs in financial statements. By analysing and understanding observations at the beginning of the research, which in this case is the accounting for artwork in the non-digital sense, the idea is to develop a new method or theory to solve the research question. This was achieved by comparing the guidelines, or lack thereof, for the accounting treatment of artwork, and analysing how these can be applied to NFTs of artwork. At the end of the qualitative research, I was able to formulate a solution to the research problem in question.

VII. DATA COLLECTION AND DATA ANALYSIS

The data collected consisted primarily of secondary data. This data came from a range of articles which studied the concepts of blockchain, crypto-assets, NFTs, art and accounting. Additionally, primary data was obtained through conducting an interview.

A key method of data analysis that I used is content analysis. I analysed the information from texts and articles which I found relevant to the study. I also analysed the responses to my interview questions using this analysis approach. Another type of analysis used is narrative analysis, which I used in the process of reformulating responses to the interview questions too.

All of these approaches allowed me to carry out effective research. Qualitative methodology enabled the collection, analysis, and interpretation of data in order to come to specific conclusions which will be discussed below.

FINDINGS AND CONCLUDING REMARKS

The aim of this research is to analyse NFTs per se, the art market, and consider how accounting standards need to be adapted in order to include NFTs to ensure that they can be accurately recognised, measured, and reflected in financial statements. In order to do so, a qualitative research approach was undertaken, which is explained in more detail above.

The paper commenced by analysing and defining NFTs. NFTs were defined as “cryptographic tokens built on the Ethereum blockchain, which are ‘minted’ and then sold” (Mudgil, S. (2021)). The non-fungible aspect of NFTs was also defined, in that each token or NFT is unique. This contrasts with Bitcoin and other cryptocurrencies which are fungible tokens, i.e., one bitcoin can be traded for another bitcoin. In order to fully understand this new phenomenon, it was necessary to consider the relevant stakeholders, which include the creators of NFTs, those who wish to acquire an NFT, i.e., the buyer, and also some malicious platform users who engage in acts of scamming.

A key component of NFTs is the ownership rights that a buyer is entitled to after purchasing an NFT. These rights are essentially the equivalent to the deeds of a property and are the sole method to verify that the purchaser is the legitimate owner of the NFT. Ownership rights are extremely important to those who have purchased an NFT, as they ensure that the buyer has the exclusive right to the digital art. Of course, acts of copying, editing, and sharing NFTs can occur, but there are a number of legal and regulatory concepts which aim to prevent such actions from occurring. Intellectual property rights and copyright are two main features of the legal concepts that relate to NFTs.

A number of marketplaces and standards were researched, which assisted with understanding how exactly NFTs work, and how they are standardised. It was found that some of the popular marketplaces include Rarible and OpenSea. The most relevant crypto-standards for NFTs include ERC-721, ERC-20, and ERC-1155, where ERC stands for Ethereum Request for Comment. These standards all serve different purposes for NFTs to ensure that the technology can function seamlessly.

A point of interest in NFTs is the major hype that surrounded them in the later months of 2021. Interestingly, it was found that positive returns on cryptocurrencies such as Bitcoin led to an increase in Google searches for NFTs, which in turn increased their popularity.

It was also established that the accounting profession has changes drastically in the last few years, particularly with many firms making the move to a paperless and cloud-based systems. Furthermore, more and more firms are implementing blockchain-based accounting information systems which aid in the management and storage of data. There is a reduced likelihood of information asymmetry, and less likelihood of scams, hacking, and security breaches when such a system is in place.

A number of accounting considerations were discussed in the paper, such as considering art as an asset class, accounting for the holder of an NFT, accounting for the issuer of an NFT, and accounting for physical art under existing guidelines. Interestingly, the research identified a lack of information surrounding accounting for art and also accounting for NFTs as art. After further research, I discovered that at present, there is an absence of accounting standards from any accounting or standard setting body. Therefore, it was necessary to analyse how art has been accounted for up until now. An interview conducted with a chartered accountant gave great insight into accounting for art and highlighted three different situations and how art is accounted for differently depending on the situation, i.e., as the art dealer, purchasing art as an investment, or purchasing art for business purposes. Although there are no standards to offer concrete advice on this matter, these are typically the methods that the majority of accountants follow in order to recognise, measure, and treat artwork in the financial statements.

Having analysed further research from IFRS Consulting, it was clear to me that a number of standards needed to be adapted, and their scope widened, in order to include the popular phenomenon of NFTs. As a result, I suggested several different proposals which could be considered in order to tackle this issue, such as expanding IAS 1, Presentation of Financial Statements, to include relevant disclosures surrounding NFTs, to broaden the scope of IAS 38, Intangible Assets, to follow the existing guidelines for physical art, and to adapt the valuation process in order to adequately value NFTs in the financial statements.

To conclude, it is my belief that NFTs have a growing and increasingly important role in the modern art world. Traditional accounting standards are outdated in terms of their appropriateness to account for NFTs. There are compelling reasons for new and updated guidelines in this area to ensure best practice in accounting for NFTs.

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