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Potential Advantages and Disadvantages of NFT-Applied Digital Art

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Abstract

Fraudulent behaviour within the art sector has been around since the Roman empire. The difficulty of proving provenance and authenticity has led to various art scandals around the world. The use of NFTs with their underlying blockchain technology has been described as a solution to these problems when applied to artworks. The recent public interest for NFT-applied to digital art and its perceived functionality is the motivation to investigate the usage of NFT digital art. Therefore, this study discusses the potential advantages and disadvantages of NFT-applied digital art. The results are based on (i) a literature analysis of previously identified advantages and disadvantages, (ii) the use of Practice Theory to investigate underlying motives to engage in the practice and (iii) an empirical review of nine respondents involved with NFTs applied to digital art. Potential advantages a majority of the respondents supported were the following: The advantage of royalty sharing, versatile utilization, provenance and exposure to larger markets. Potential disadvantages a majority of the respondents supported were the following: The disadvantage of the false belief of provenance, fraudulent behaviour, environmental aspects, legal aspects and that NFTs are currently not blockchain agnostic. The underlying motives the respondents expressed were financially driven and curiosity about the technology. The contribution of this paper will be useful for potential NFT-stakeholders to assess whether it is worth engaging in the area based on its current potential advantages and disadvantages. Furthermore, by highlighting the technology's potential disadvantages, the paper also describes potential improvement factors which the NFT-community would benefit from resolving.

Keywords

'NFT', 'Non-fungible tokens', 'Digital Art', 'Advantages', 'Disadvantages', 'Practice Theory', 'Blockchain'

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A handwritten signature in black ink, appearing to read 'Erik Lidén', centered on the page.

Erik Lidén

1 Introduction

1.1 Background

In 2016, the global trade of fake goods was worth around half a trillion dollars a year. A sum which is equivalent to 2.5% of global imports (OECD & EUIPO, 2016). Counterfeit and forgery have been around ever since the Romans, more specifically forging art (Lenain, 2011). The Romans forged sculptures to look like those their neighbour, the Greeks'. Later on, during medieval times, claiming relics that were actual pieces of saints or objects closely linked to them occurred often. Therefore, great lengths were taken to authenticate these claims (Lenain, 2011). During the renaissance, the interest for specific art styles surged. As many were to gain in the increased demand for these artworks, they became commercial assets. Artists started to mark their works to ensure the possibility of future identification. These marks later evolved into signatures. Forgers started to apply famous artists' signatures to their artworks in the hope to increase the value of said artwork. (Bonner, n.d) This phenomenon was even common among now renowned artists such as Michelangelo who sold a sculpture at a higher price because the sculpture had been dipped in acid to look older than it actually was. (Rubinstein, 1986)

Nowadays, art being sold for millions of dollars and then identified as forgeries occur often. In 2016, the art gallery Knoedler in New York was accused of selling forgeries for \$80 million during a 15-year time period (Wang, 2016). Giuliana Ruffini, an art collector, was accused of selling artworks for around £179 million where the authenticity of particularly four artworks has been questioned by experts (Noce, 2016). The quality of the forgeries has become so similar to the authentic artwork that the auction company Sotheby's have hired an in-house fraud identifying expert (Subramanian, 2018). Furthermore, there are even experts that believe that 20% of art owned by public museums will be attributed to a different painter in 100 years (Glover, 2010).

One can wonder why the forgery of high-end art has become more common? As previously stated, certain types of art are sold for millions of dollars. According to the Economist, in general, art sold for more than €200,000 grows in value five times faster than cheaper paintings (The Economist, 2015). Furthermore, the underlying value of American popular art grew nine times higher than S&P 500 between 2006-2016 (Tozer, 2016). As a result, art has attracted a lot of speculators where nearly 75% of art was purchased as an investment in 2016, which is an increase from 50% in 2012 (Picanti di Torcello, 2011; The Economist, 2015).

According to Newman and Bloom (2011), the value of art is defined by two key factors; the creative performance and the degree of physical contact with the original artist. The value of an artwork deteriorates if identified as a forgery and if the creative act is deemed unsatisfactory. (Newman and Bloom, 2011). As a consequence, the authentication of art is an important factor during valuation. This is usually exhibited in the documentation that accompanies the artwork which assures genuinity and the authorship of the artwork. The documentation is usually a signed certificate of authenticity. For more established works, getting the artwork appraised by experts can also strengthen the claim of authenticity (Ignacia See, 2019). With antique artworks, there is rarely a signed certificate of authenticity. Therefore, authentication strengthened by provenance is important. Provenance is also closely associated with authenticity by revealing past ownership. Currently, many museums and art galleries require a detailed provenance before accepting art. Unfortunately, not all sellers wish to be public. This can hinder art from being sold or make other authentication methods such as artwork appraisal more crucial for the artwork to be deemed original (Levine, 2009). This sort of authentication is not without fail, as proved in the Knoedler scandal (Wang, 2016).

1.1.1 Blockchain Technology

Blockchain technology has been discussed as a possible solution to the identified difficulties regarding provenance and authentication. The reason is that blockchain provides a bonded registry of previous ownership. Although, the validity is dependent on the starting point of the blockchain registry (Whitaker, 2019).

Blockchain technology gained traction when Nakamoto (2008) published a paper that laid the groundwork for the cryptocurrency Bitcoin (Nakamoto, 2008). The technology is influenced by Haber and Stornetta's paper regarding the possibility of timestamping documents from 1991 (Haber and Stornetta, 1991). Blockchain technology can be defined as a distributed ledger with the possibility of saving information in a secure and permanent manner. The information is usually about the receiver and sender and what is being sent between them. A blockchain consists of data packages that are chained together, called "Blocks". Each block has a certain amount of storage which is filled up with information concerning the transactions. Every block gets added onto the existing chain of blocks, in other words, the "Blockchain". The blockchain, therefore, represents the full ledger of the transaction history (Nofer et al, 2017) For the blocks to "chain" together, each block contains a hash of the previous blocks and a timestamp addressing when the transaction took place. As a consequence of the hash, the chain of blocks become immutable and irreversible as long as the blocks are not invalidated by the other nodes/users on the blockchain network (Zheng et al, 2018). The consensus algorithm proposed by Nakamoto (2008) entails that the majority of the nodes on the network accept the new block on the blockchain. Each node has a personal copy of the distributed ledger. The consensus is achieved when the ledger of the nodes corresponds to the newly proposed ledger on the blockchain. If the ledgers align, the block is added. As a result, no centralized power decides which blocks should be added to the existing chain (Zheng et al, 2018).

1.1.2 Non-Fungible Tokens

The words "Blockchain" and "Art" reached news headlines in March of 2021 when a digital art piece from the artist "Beeple" sold for \$69.3 million at an online auction hosted by Christie's. The auction broke world records, such as "highest total for an online auction" and "highest price for a digital art piece". The art piece was associated with a blockchain technology called Non-Fungible Token (NFT) (Riegelhaupt, 2021).

NFTs are related with blockchains as these tokens are traded on decentralized blockchain infrastructure. Although many blockchain platforms have started with NFTs, the most common is Ethereum, which was also the original NFT platform (Wang et al, 2021). Compared to traditional cryptocurrencies such as Bitcoin, where each coin is identical to the next and interchangeable, NFTs are distinguishable and unique. Hence the name “Non-fungible”. Binding these tokens to the physical and digital property to provide unique identification has been the most popular utilization. (Finzer, 2020) This has enabled collectors of digital property to guarantee that their intellectual property is the original as a result of tracking the provenance of the token on the corresponding blockchain (Wang et al, 2021). The increased interest in NFTs is also apparent, during the first and second quarters of 2021 the NFT-sales volume was \$1.2 billion respectively \$1.3 billion. In the third quarter of 2021, the sales surged to \$10.7 billion (Howcroft, 2021). This surge shows that either more users are trading or that the current users are trading at higher prices. The price of cryptocurrencies and NFTs have indicated co-movement between the two markets. Implying the increase in the price of cryptocurrencies has affected the prices in NFT-market. Due to this fact, NFTs are usually traded in cryptocurrencies (Dowling, 2021). Certain investment banks do not believe that the NFT prices are a temporary surge and have forecasted the market to reach \$80 billion in 2025 (Bloomberg, 2021).

Although NFTs have received a lot of praise, environmental problems as a result of high energy consumption have been identified (Calma, 2021). This problem is not restricted to NFTs and is a common problem with other cryptocurrencies like Bitcoin (de Vries, 2018). When a new block on a given blockchain is created large amounts of computational power is required. This is because it gets computationally more difficult for each block created. This task of creating blocks is called “mining” and the nodes on the network that mine are called “miners”. When a new block has been created, the miner is rewarded with a certain amount of cryptocurrency. As the value of certain cryptocurrencies has risen, so has lucrateness and the incentive to start mining (Sedlmeir et al. 2020). The energy consumption required associated with mining cryptocurrency has therefore increased (de Vries, 2018). Consequently, miners are moving their computers to areas with lower electricity costs in often coal-rich countries such as Kazakhstan which is bad for the environment (Huang et al, 2021). As previously stated, NFTs are mainly created on the Ethereum network and as of writing this paper with the block-creating methodology called “Proof-of-Work”. In December 2021, if the Ethereum blockchain was a country, it would consume roughly the same amount of energy

annually as Kazakhstan (Digiconomist, 2021). To tackle these environmental challenges, the Ethereum community has announced a switch in the block creation methodology as part of a larger upgrade of the entire Ethereum blockchain. This upgrade will be called Ethereum 2. The new method is called “Proof-of-Stake” and is meant to drastically decrease energy consumption. This update has yet to be implemented with the current Ethereum blockchain (Ethereum.org, n.d).

1.1.3 Gas Fees and Minting

When dealing with NFTs, it is important to understand the different costs associated with trading and creating NFTs. These costs are called “gas fees” and are used to pay the node operators who oversee registering the transactions on the blockchain. “Minting” is another type of gas fee which is done when creating the token associated with the digital or physical item on the specific blockchain. The gas fees for transactions and minting vary depending on the volume of transactions taking place on the blockchain. Since the blocks are added on a regular basis, the higher the volume, the higher the price (Valeonti et al, 2021).

1.1.4 Smart Contracts

Another key attribute to understand is what the “token” is made of. The main code behind an NFT is encapsulated in what is called a “smart contract”. Smart contracts are defined as scripts stored on the blockchain. When the scripts are triggered they perform a set of actions in a predefined manner if the conditions are met or a certain event happens (Christidis and Devetsikiotis, 2016). In the case of NFTs, there are a couple of “token-standards” such as ERC-721 which require a certain amount of functions and events for the smart contract to be deemed a “Non-fungible token”. The creator of an NFT smart contract can, for example, determine the scarcity of the NFT and if royalties are to be earned (Ali and Bagui, 2021).

1.2 Problem Formulation

With the raised interest in NFTs, one can wonder if the praise is justified or merely a temporary hype. Only a handful studies elaborate on potential advantages and disadvantages from the use of NFT applied digital art (Wilson et al, 2021; Valeonti et al, 2021), but fail to identify why the technology is used by the user. The increased usage of the technology in relation to the lack of research within the area is a knowledge gap. Therefore, analyzing NFT applied digital art to unravel potential advantages and disadvantages would benefit the understanding of the usage of the technology. Furthermore, investigating what underlying motives and social norms influence the usage of the technology would give a broader understanding of its utilization. The purpose of this study is therefore to give potential NFT-stakeholders a sociotechnical assessment of the technology. By derivation, this implies examining the practice, underlying motives and norms of applying NFTs to digital art and of consuming/ owning the NFT applied digital art.

1.3 Research Question

To realize the above articulated purpose, this study offers some novel answers to the following two research questions:

What are the potential advantages of applying NFTs to digital art?

What are the potential disadvantages of applying NFTs to digital art?

“Advantages” refers here to factors with a perceived positive impact according to the creator of the digital art and the owner/consumer of the digital art. With “disadvantages” refers here to factors with a perceived negative impact according to the creator of the digital art and the owner/consumer of the digital art.

1.4 Delimitations

This thesis will only focus on the advantages and disadvantages related to NFT with digital art. There are many other ways to utilize NFTs both through a physical and other digital scopes which will not be covered within this thesis. The reason for choosing NFTs with digital art is because the area has received the most attention from scientific and news coverage. Furthermore, the advantages and disadvantages presented are perceived from a creator of NFT art and a consumer of NFT art perspective. Therefore, potential advantages from intermediary stakeholders and other actors will not be addressed within this thesis. The limitation is done because the intermediary-stakeholders view is related to the technology being used (Blockchain) rather than actual digital art applied with NFTs. In comparison, creators and consumers of NFTs might have more diverse views and motivations reaching beyond the underlying technology. Furthermore, this study is limited to nine respondents based on the selection criteria, as detailed in “Research Method”- section of the paper. Lastly, this study is also limited by its use of the Practice Theory for the design and analysis of the data collected. Other respondents and theories may have altered the results of the paper.

1.5 Comparing Non-NFT Digital Art and NFT Digital Art

Before discussing digital art, it may be suitable to define “Art”. According to the Merriam-Webster dictionary “Art” is “*something that is created with imagination and skill and that is beautiful or that expresses important ideas or feelings*” (Merriam-Webster, n.d). Digital art is an extension of art created using digital technology and is said to have the following characteristics; perfect duplicability, interactivity, networkability, variability and compositeness (Chun, 2011). Perfect duplicability implies that every bit that together composes the art is duplicable resulting in a perfect duplication of the original work. Interactivity addresses the possibility for the audience to participate and interact in the creation and visualization of the digital artwork. Networkability refers to the potentiality of creating art using the internet as a primary source and tool. Variability implies that the artwork can transform over time and can easily be manipulated. Lastly, compositeness refers to the heterogeneous combination of multimedia from which the digital artwork is made of (Chun, 2011).

In both cases of Non-NFT digital art and NFT digital art, the creation process of the artwork is the same. Both cases use digital technology to create the artwork. The difference lies in the distribution practices after the artwork is created.

1.5.1 Non-NFT Practice After Creation

After the artwork is created by the creator, there are many potential scenarios in order to sell said artwork. For example, selling through their own website or via an online retail website. The creator needs to decide how many copies will be sold, determine the price and what licensing options should be enforced on the artwork (Jacobsen, 2020).

The consumer of the artworks pays via the online retail website or directly to the creator of the artwork (depending on what payments arrangements are in place). If the payment is successful and the consumer accepts the licensing agreement. The consumer then receives a downloadable file with said artwork. The license agreement will thereafter dictate what the granted actions the consumer of the artwork has. Usually, the agreement only grants personal usage to the consumer and the exclusive ownership and copyright rights remain with the artist (Schlackman, 2013; Copyright.gov, n.d).

1.5.2 NFT Practice After Creation

After the digital artwork is created, the next step is to assign an NFT to the specific art piece. This can be achieved in several ways. Either the creator does it by themselves or “mints” via an NFT-marketplace. Regardless of the method, a smart contract needs to be created either customized by the creator or a standard version through the NFT-marketplaces (Clark, 2021). When creating the smart contract, connecting a crypto wallet is needed. A crypto wallet is a digital wallet that enables transactions with cryptocurrencies such as Bitcoin and Ethereum (Coinbase, n.d). If the creator wants to sell via an NFT marketplace then connecting their crypto wallet to the NFT marketplace platform is mandatory. A startup fee may be required depending on the marketplace. Thereafter the creator needs to choose which blockchain platform to host the NFT. Each blockchain platform has certain tradeoffs such as the price of gas fees or the amount of artworks allowed to mint. Additionally, the marketplaces may only support certain blockchain platforms, reducing the variety even more. Afterwards, the minting process is done and the NFT is added to the chosen blockchain. As previously stated, depending on the chosen blockchain platform, the volume and demand for minting will decide

the fee for minting the artwork. In other words, assigning the NFT to the artwork. Thereafter the artwork is available to be purchased with the creator's predefined selling method such as a fixed price, auction or highest bid (Clark, 2021).

To reduce the risk of minting an artwork that does not sell, certain platforms have introduced the practice of "lazy minting". The concept implies the artwork gets minted upon getting sold for the first time. Thereby when the consumer buys the NFT they pay for the artwork and the minting fee associated with the NFT (Kolber, 2021). Nevertheless, for an NFT- consumer to buy NFTs they need a crypto wallet with the appropriate cryptocurrency for the specific blockchain. If they are buying via a marketplace they need to connect their wallet to the marketplace platform. Depending on the predefined selling option of the creator/seller the price of the NFT artwork will be fixed or fluctuate. Regardless of the selling method, when a bid is placed or an offer is accepted, a gas fee occurs (Clark, 2021). In other words, even if the NFT-consumer loses the bid, they will still have to pay a gas fee. As previously stated, the gas fee can vary. With the gas fee, the transaction is administered on the blockchain and the NFT is transferred to the new owner's crypto wallet. The new owner of the NFT can thereafter sell the NFT using NFT marketplaces and cryptocurrencies that are compatible with the blockchain on which the NFT is stored (Clark, 2021).

2 Previous studies

This section presents the potential advantages and disadvantages of applying NFTs to digital art. The section is based on previous studies within the area and is exhibited from the perspectives of NFT applied digital art creators and consumers/collectors.

2.1 Potential Advantages

2.1.1 Provenance

Since NFTs are founded on a blockchain-based ecosystem, similar potential advantages have also been proven. One of the main advantages of blockchain technology is the possibility of provenance through traceability. This is possible since every transaction is recorded on the distributed ledger and is said to be immutable (Lu & Xu, 2017). Therefore, similar advantages have been lifted when discussing NFTs (Popescu, 2021). The possibility of verifying provenance through traceability has the possibility of eliminating third-party authorization methods, which otherwise are common in high-end physical art sales (Ignacia See, 2019). This implies that potential buyers or other stakeholders can view the transaction history of the art pieces from when it was minted on the blockchain platform (Popescu, 2021).

2.1.2 Royalty Sharing

Artists, in general, cannot gain royalties after selling their artworks. In comparison, when applying an NFT to the artwork, there is a possibility of receiving predetermined royalties for each transaction made (Wang et al, 2021; Popescu, 2021; Kugler, 2021). For example, the artist can implement the possibility of receiving 10% in royalties for each transaction within the NFT's smart contract. Furthermore, a standardized protocol of royalties on the Ethereum blockchain also enables the royalty percentage to drop linearly over time. Implying the artist has lesser to gain in distant future transactions compared to near-future ones (Burks et al, 2020).

2.1.3 Expose Art to Larger Markets

Previously, only well-known artists have had the possibility to command large fees for commissioned work or gallery residencies. With the eruption of NFT-marketplaces, less known artists have gained the possibility to share their works with a larger audience. This has been done without marginalizing the provenance or scarcity of the art pieces (Wilson et al, 2021). OpenSea, which is the largest NFT marketplace, had as of January 6th 2022, over 2 million NFT-collections and 80 million NFTs on its site reaching over 1.26 million active users (Melinek, 2022).

2.1.4 Versatile Utilization

Some NFTs associated with art are not only used to uniquely identify the attached artwork. Certain NFT-art collections, such as the “Bored Ape Yacht Club” have further elaborated with the tokens. Giving the tokens additional utility as they double as membership cards for their exclusive community. This authorization is achieved by signing in with their Crypto-wallet and verifying ownership of said art piece. (Bored Ape Yacht Club, n.d). Similar investments have been done with for example Adidas where NFT-holders are given access to exclusive physical and digital merchandise (Adidas, n.d). Since the NFT-art boom of 2021, more use cases for NFT applied digital property has arisen. Currently, it is possible to acquire land in digital universes called “Metaverse” with NFTs (Jeon et al, 2021), own famous tweets (Lyons, 2021) and videos of recorded sports highlights (Young, 2021). The proven versatility of NFTs has enabled the possibility to monetize previously free digital assets. Giving creators a better chance of monetizing their works and fans getting access to authentic and exclusive content (Wilson et al, 2021).

2.1.5 Summary of potential advantages

Potential advantages	For the creator	For the consumer/owner	Sources
Provenance		X	(Popescu, 2021)
Royalty Sharing	X		(Wang et al, 2021), (Popescu, 2021), (Kugler, 2021), (Burks et al, 2020)
Expose arts to larger markets	X		(Wilson et al, 2021)
Versatile Utilization	X	X	(Wilson et al, 2021)

Figure 1: Table of potential advantages when applying NFTs to digital art.

2.2 Potential Disadvantages

2.2.1 The False Belief of Provenance

Anonymization within blockchain technology is a key characteristic (Wang et al, 2018). Although applying NFTs to assets increase the transparency and traceability of who the current owner is, previous owners and the first owner were. There is a risk of a false perception of provenance since the blockchain can only show provenance from the initial registering of the asset. Therefore, there is a risk of additional transactions having taken place before the minting. As a result, rigorous due diligence is still required with NFT applied art in a similar way as traditional physical art. Due to the anonymity characteristic of blockchain, verifying the creator of the NFT (the wallet address that minted the NFT), and the real-world creator is therefore required. Most NFT platforms have already implemented such verification processes. Nevertheless, not all NFTs are sold via platforms (Valeonti et al, 2021).

2.2.2 Storage

Since the amount of NFT transactions has increased during 2021, the cost (gas fees) of registering larger files to certain blockchain platforms such as Ethereum has risen (Etherscan.io, n.d). Consequently, many NFT art collections do not store the actual art piece together with the token on the blockchain, but rather register a smart contract that links to the actual art piece. This is known as “off-chain NFTs” and implies critical data such as the art piece is stored elsewhere from where the NFT is registered. There have been instances of NFTs with broken URL links. In other words, the token no longer links to the art piece it previously was associated with. Due to the immutability of the blockchain, there is no possibility of updating such URL links either (Wilson et al, 2021).

2.2.3 Environmental Aspects

As previously mentioned, currently Ethereum is the status quo in regard to supporting NFTs (Calma, 2021). Its current consensus method (Proof-of-Work) has therefore resulted in large energy consumption. In fact, Shaw, (2021) implies that the Bepple artwork sold for approximately \$69 million produced 79kg of CO2 emissions. The equivalence is the combined annual energy consumption of 13 homes (Shaw, 2021). The Ethereum community is aware of these discrepancies and vowed to switch the authentication method to (Proof-of-Stake) which is supposed to radically decrease the environmental impact of transactions done on the Ethereum blockchain platform (Ethereum.org, n.d). Nevertheless, critics are not content with the future promise of switching consensus methods (Valeonti et al, 2021). They indicate that the plan of switching to the Proof-of-Stake method has existed nearly as long as the Ethereum blockchain platform has been around. Indicating the switch is somewhat of a “running joke” (Pipkin, 2021).

2.2.4 Not Blockchain Agnostic

Another problem is related to the long-term storage of NFT applied digital art. The NFT-platforms can with ease disappear or become obsolete (Sherman, 2021). Certain NFT marketplaces such as “Rarible.com” even state in their terms of services that they “*cannot guarantee continued operation or the integrity and persistence of data on IPFS*” (Valeonti et al, 2021). IPFS is a distributed protocol enabling peer-to-peer storage used by certain NFT marketplace platforms (IPFS, n.d). Furthermore, NFT-marketplaces such as “Rarible.com” do not offer the possibility of moving NFTs to other blockchains (Rarible.com, n.d). Therefore, if the blockchain platform were to become obsolete, there is no way of moving the asset elsewhere. Certain less popular blockchain platforms with lower transaction fees have taken matters into their own hands and created so-called “cross-chain bridges” which enable users to move NFTs from popular blockchain platforms such as Ethereum to their own for a one-time fee (Chen, 2021).

2.2.5 Legal Aspects

NFTs have been described as an authorized way to determine the ownership of artwork (Kugler, 2021). Nevertheless, discussions regarding certain legal issues have been identified. Firstly, contrary to what an NFTs consumer might assume, the original creator of the NFT retains exclusive rights to copy, modify and publicly display the art unless someone else is assigned these rights (Vallabhaneni, 2021). Although, certain NFT art collections such as “Bored Ape Yacht Club” give the owner of each NFT full ownership and commercial rights of their NFT and underlying artwork (Bored Ape Yacht Club, n.d). In most cases, the purchase of NFT will from a legal perspective, resemble a cryptographically signed receipt proving the ownership of a certain artwork but not the rights to commercial usage (Lewis et al, 2021). Secondly, due to the anonymity factors of blockchain technology, enforcing contracts through ownership verification can be difficult (Lewis et al, 2021). Furthermore, the legal enforceability of the smart contract is also questioned as they need to adapt to current legal contract frameworks across many jurisdictions (Giancaspro, 2017). Lastly, due to the immutable attribute of typical blockchains, there are certain risks regarding data protection laws, such as GDPR (General Data Protection Regulation) in the EU (Tatar et al, 2018). The “right to be forgotten” (art 17. GDPR.EU, 2018) is difficult to comply with as the potential user data stored on blockchain is not possible to remove (Tatar et al, 2018).

2.2.6 Summary of Potential Disadvantages

Potential Disadvantages	For the creator	For the owner/consumer	Sources:
False Belief of Provenance		X	(Valeonti et al, 2021)
Storage		X	(Wilson et al, 2021)
Environmental Aspects	X	X	(Valeonti et al, 2021), (Pipkin, 2021)
Not Blockchain Agnostic	X	X	(Sherman, 2021), (Valeonti et al, 2021)
Legal Aspects	X	X	(Vallabhaneni, 2021), (Giancaspro, 2017), (Tatar et al, 2018)

Figure 2: Table of potential disadvantages when applying NFTs to digital art.

2.3 Summarization of Previous Studies

Based on the literature analysis the following potential advantages were identified; A possibility to prove provenance, a possibility to share royalties, a possibility to expose are to larger markets and lastly a possibility to use the NFT applied digital art for versatile purposes. Regarding potential disadvantages, the following factors were identified in the literature analysis; A risk of false belief of the actual provenance of the NFT applied art. A risk of losing ones NFT applied digital art due to storage issues. A risk of creating a negative environmental impact. A risk of not having blockchain agnostic platforms and lastly a risk of legal complications.

Due to NFT's novelty within research, there is a lack of published articles within the area in relation to the amount of exposure NFTs have received by the public this past year. Therefore, not all of the factors related to the potential advantages and disadvantages are specified in multiple papers. As a consequence, discussing the validity of the factors is relevant. With the disadvantage factors supported by one source, the paper in question is a single case study. Nevertheless, the factors addressed from the study are related to NFTs applied to digital art in general. The factors addressing the potential advantages with only one source are taken from papers which have done summarizations of the current NFT-landscape based on previous papers and empirical findings. As a result, the unique factors presented by Popesco (2021), Wilson et al (2021) and Valeonti et al (2021) were deemed relevant albeit the lack of additional support for the factors in other papers.

3 Theoretical Framework

In addition to identifying potential advantages and disadvantages of NFT applied to digital art. Understanding the underlying motives for why and how users act intentionally and unintentionally with NFTs will give a deeper understanding of the practice. This can be achieved by examining the practices of creation and ownership of digital art with the application of NFTs. This analysis is actualized through the theoretical lens of the social theory: Practice Theory. The theory distinguishes from other classical figures such as rationalized theories ‘homo economicus’ and social normative theories ‘homo sociologicus’ (Reckwitz, 2002). This is apparent in the way both the action of the individual and how social presence is captured. (Reckwitz, 2002). In comparison, ‘homo economicus’ interprets actions as a result of the individual’s own personal interests and intentions. Thereby the social structures are the output of these interests. ‘Homo sociologicus’ explains actions as a product of collective norms and values that mold society’s social order. Practice Theories can therefore be viewed as an intersection of the ‘homo economicus’ and ‘homo sociologicus’ (Reckwitz, 2002). Therefore, the theory entails the NFT-stakeholder’s actions can be explained by both personal intentions and collective norms.

3.1 Practice Theory

The usage of ‘practice theory’ was first introduced by the anthropologist Ortner (1984). Although there is not a single defined version of the theory, the variants are associated with social sciences with the purpose of a wide comprehension of practices. The usage of the theory should result in explaining the ‘why’, ‘how’, ‘meaning’ and the ‘bigger picture’ of a certain phenomenon. (Schatzki, 2018). The different types of practice theories have a varying number of features and extensibility which is related to the philosophers’ perception of what they deem as practice theory. Nevertheless, four cornerstones are foundational for practice theory (Schatzki, 2018). First of all, social life is composed of practices. Although, the different types of practice theories do not have an unambiguous definition of what is defined as a practice. Even so, multiple individuals must do this thing for the activity to qualify as a practice. In other words, one person cannot enact a practice alone. Secondly, users of the theory agree that the world contains more than one practice. Furthermore, these practices are intertwined with each other creating complexes that connect to each other creating larger bundles called constellations. The third cornerstone is related to the previous prerequisite. The larger social phenomena such as religions, organizations, power and so on, are all related to

constellations of practices. Lastly, practice theorists imply humans act on undefined knowledge (Schatzki, 2018). Theorists have labelled this knowledge differently for example, such as “habitus” (Bourdieu, 1976) and “know-how” (Ryle,1971). This knowledge implies humans perform practices for reasons which are difficult to formulate the rationale behind (Schatzki, 2018).

Another area in which practice theorists have different interpretations is the definition of a practice. Nevertheless, two concepts are mutually accepted. Firstly, practices are organized activities. Therefore, to understand practices, identifying actions in relation to their organizational context is crucial. For example, the practice of teaching is composed of specific actions within an educational organisation. The second concept entails practices that are closely linked with materiality. Implying when understanding practices, addressing the materiality associated with the actions is required. For example, if certain technology is used within a specific practice (Schatzki, 2018).

To deeper understand the various types of materiality used in practices and thereby in Practice Theory, Tondl (1974) created three stages of materiality advancements. The stages give insight to the various levels materiality are linked with practices as explained above. Tondl’s (1974) materiality advancements are in relation to human interaction (Leder, 1990). The first stage expresses what some may call classical “tools”, that are handled and “powered” by the body. For example, a pencil. The second stage is often described as machines powered by non-human energy sources. The materiality is still entwined with the practice but the human interacts in a different way. For example, a typewriter. Tondl’s third stage are machines that do not require human interaction at all (Leder, 1990). Morley (2017), uses central heating as an example, the automated machine does not need human interaction to regulate the predefined temperature.

To understand the practice of NFT-applied digital art. Four elements which are a concatenation and summarization of four different practice theory frameworks will be used. The depiction is created by Gram-Hanssen (2010) and has previously been exhibited when studying the practice of standby consumption of household electricity (Gram-Hanssen, 2010). The framework by Gram-Hanssen has been chosen because it has been previously utilized in an interview based study similar to this thesis. Thereby proving the applicability of Practice Theory in studies using interviews as the empirical base. The four elements used in Gram-Hanssen's framework are the following:

- *Engagements*

This element refers to the goal-driven purpose of why someone performs the practice and what meaning this has for the individual. For example, playing football to get healthier.

- *Technologies*

The element of technologies is related to the materiality aspect which Schatzki (2018) implies is closely intertwined with the practice, whereas other practitioners have included the technologies participating in the practice such as Tondl (1974) (Gram-Hanssen, 2010). An example is the football boots used when playing football.

- *Institutionalized knowledge*

The element relates to the specific knowledge required to execute the specific practice. An example is the rules required to play football.

- *Know-how and embodied habits*

The know-how element is similar to the undefined knowledge and intuitions regarding why humans act as they do based on societal structures as previously described by Schatzki (2018). An example is an underlying norm of why many kids start playing football at a young age.

When applying this version of the theory, the importance of understanding that with another practice theory framework a different result may have been attained. Furthermore, this becomes even more apparent if a different social theory had been used. Such as a rational theory like Transaction Cost Theory (Williamson, 1991).

4 Research Method

4.1 Research Paradigm

The research paradigm chosen for this paper is *interpretive* research. Meaning instead of searching for an exact truth, this study will through qualitative research methods “interpret” the reality provided in the data retrieval methods (Bhattacharjee, 2012, p.104). As the respondents may interpret different subjective realities, there is no way of determining the sole “correct” answer. Furthermore, the use of certain words may have different meanings amongst the respondents. This characteristic was important to have in mind when analyzing the data. (Oates 2006, p.262) Another characteristic that differentiates *interpretivism* from for example *positivism* is what is known as “Researcher reflexivity” by (Oates, 2006, p.262) and by Klein and Myers (1999) as “The Principle of Interaction Between the Researcher and the Subjects”. As the researcher, acknowledging that one’s personal assumptions and other subjective thoughts will inevitably shape the research process. Although the phenomenon portrayed in the paper should still be done fairly and accurately (Bhattacharjee, 2012, p.106).

The research will study people in their “natural setting” in comparison to positivism. Meaning that the study is not artificially produced. This frees the respondents from the researcher’s subjective inquiries that may otherwise occur in more laboratory-like settings (Oates, 2006, p.262) Another benefit of *interpretivism* is the data collection and analysis occurred simultaneously and iteratively. Implying that the questions asked during the data collection process may be modified to better fit the research question in between the interviews. Furthermore, the possibility to adjust the research question has also been of importance throughout the research process. These characteristics had not been applicable within a positivistic research paradigm (Bhattacharjee, 2012, p.105). Iterating through individual parts and the patterns that emerge is in accordance with Klein and Myers’ definition of the “Hermeneutic Circle” which is deemed to be foundational to all interpretive work of hermeneutic nature (Klein and Myers, 1999). This iterative process of shifting back and forth was done until “theoretical saturation” is reached. This is achieved when the final theory created is consistent with the variety of subjective understandings supported in the data sources (Bhattacharjee, 2012, p.106).

Although *interpretivism* has many benefits, a few challenges also arise. All data sources used are not equally credible and unbiased. Since NFTs are a new phenomenon a lot of well-established research is absent. Therefore, as the researcher, identifying hidden agendas and biases will be important to understand the true nature of the problem. Another challenge considered is the possibility of generalizing and replicating the study. Using other data sources and at a different time when more research has been published in the field could hypothetically result in a different outcome (Bhattacharjee, 2012, p.105).

4.2 Strategy

To answer the research question, a combination of qualitative case studies and cross-sectional studies was applied. This combination of studies revealed the potential advantages and disadvantages of applying NFTs to digital art. The study thereby fell under the category *exploratory*. The category is justified as the NFT technology is a relatively new technology that has recently gained traction. As a result, few scientific papers have been published within the area. Therefore, real case studies have also been investigated. In comparison to traditional case studies, more than one case was investigated (Oates, 2006, p. 135-136). Furthermore, the *exploratory* study is motivated as other case study methods such as *descriptive* and *explanatory* require more information about what has occurred and try to explain why. Since NFTs are still a new subject, an *exploratory* study is better suited. (Oates, 2006, p. 135-136).

The conclusions from case studies can usually be generalized as there are similar factors in comparable use-cases. These types of generalizations belong to the category *implications*. Therefore, the outcome of this paper should be applicable in related cases. In other words, potential creators and consumers of NFT applied digital art should benefit from guidance created by the outcome of this paper. Giving these stakeholders a deeper understanding of what potential advantages and disadvantages they stand to experience when dealing with NFTs (Oates, 2006, p.138).

Since NFTs and its related technologies are relatively new, the case study approach will be a “Short-term contemporary study” which implies that the current state of NFTs within digital art will be assessed. (Oates, 2006, p.137).

The combination of qualitative case studies and a cross-sectional study has the following characteristics which are addressed and commented:

Focus on depth rather than breadth

As this is a qualitative study, fewer subjects were interviewed. Instead, the focus lay on deeper and more detailed information gathering (Oates, 2006, p.136).

Holistic Study

A typical characteristic of case studies is that the outcome should result in a “holistic study” (Oates, 2006, p.136) (Denscombe, 2014, p.55). This implies an examination of the complexity in relationships and how they are intertwined with each other rather than focusing on an isolated factor. This study succeeds with this characteristic to some extent. The complexity of relationships is examined. Although not all relationships express the same type of interconnectivity and thereby hindering the possibility of creating an overall holistic study that embraces all the addressed qualitative case studies.

Multiple sources and methods

Two different types of data sources are used in the study. First, a detailed literature analysis was done. This was motivated to find previous studies within the area and used as preparation for the second data source, interviews. The stakeholders interviewed gave their opinion on NFTs applied to art. These two data sources gave the needed informational background to extract different perspectives from relevant interviewed subjects. Which is in accordance with the factors required for the study to be deemed *exploratory* (Oates, 2006, p.136) (Denscombe, 2014, p.55).

4.3 Methodology for Data Retrieval

A literature analysis was conducted to investigate the potential advantages and disadvantages of NFTs on art. The purpose of the analysis was to find the “forefront of knowledge” within the area and understand what previous studies in the area had discovered (Hedin, 2011). The search engines used to find the “forefront of knowledge” was Scopus, Google Scholar, Google and Web of Science. Since NFTs are a relatively new phenomenon information was also found in less scientific information sources. The reason was information gets published at a faster rate without the approval of rigorous peer reviews as in scientific papers. This can of course jeopardize the veracity of the study. Therefore, articles were carefully picked from well-renowned sites to reduce this risk. Thereafter, the literature analysis was used as groundwork for the preparation and formulation of the interview questions. The purpose was to find out if the interviewed stakeholders agreed or disagreed with the findings of the literature analysis. Furthermore, the stakeholders could provide additional advantages and disadvantages which were not previously addressed in the literature analysis. The aim of the interviews was also to analyze the practice of creating NFTs through the lens of the practice theory. Finally, the answers were compiled and packaged as the results of the research question.

According to Wilson et al, (2021), there are different types of stakeholders in the NFT ecosystem. This paper focuses on two types of stakeholders. Firstly, stakeholders related to the “Digital Asset Marketplace”, which includes the content owners of the digital asset. For example, the creator of the asset. Secondly, the other group of stakeholders were from the “NFT marketplace”. A stakeholder is for example a consumer or collector of NFTs in a designated marketplace (Wilson et al, 2021). As a result, to achieve an understanding of the potential advantages and disadvantages when applying NFTs to digital art, consumer- and creator-stakeholders were contacted.

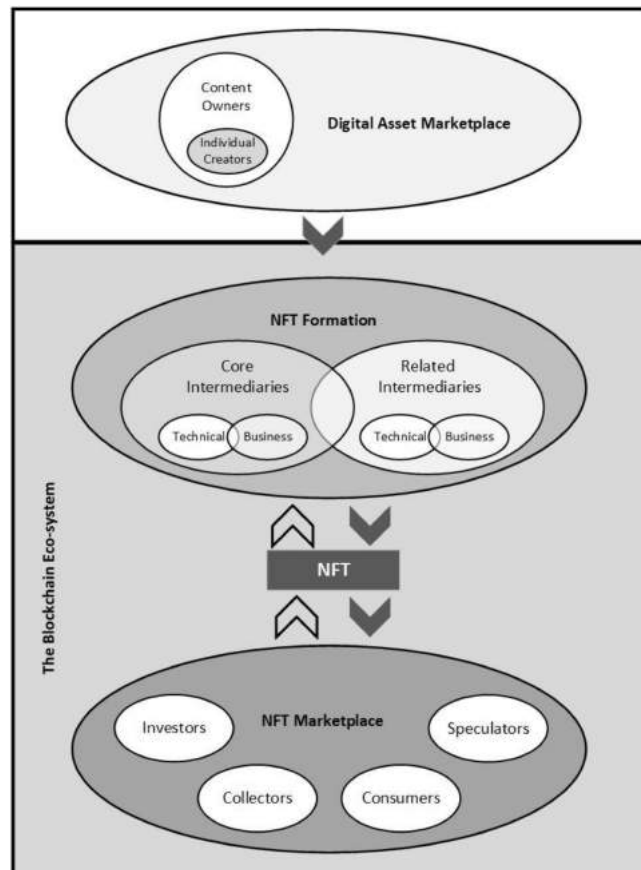


Figure 3: NFT stakeholders and relational ecosystem conception. Source:(Wilson et al, 2021)

Due to the novelty of NFTs there are few experts in the area. Therefore, to find stakeholders with experience in NFTs a couple of requirements needed to be fulfilled. The main prerequisite for initiating contact with a potential respondent were either they owned or sold NFTs on a public NFT-marketplace. Thereby proving the respondent had experience with NFTs. The requirement was verified validating the stakeholder's NFT-transactions on NFT-marketplaces such as Opensea.io and Superrare.com. Another requirement was they accepted direct messages. This requirement narrowed down the number of potential candidates as very few NFT-related stakeholders had this function enabled as a consequence of the number of spam messages they otherwise received. The social media platform, Twitter, is an established platform for NFT-related users. As a result, the initial contact with the majority of the respondents was via direct messages on Twitter. The chosen communication platform was also motivated by the lack of restricted access to specific group channels. A restriction otherwise common with other social media platforms such as Discord. Further along the data retrieval process, access was also gained to one of the Swedish NFT-community channels on Discord. This enabled additional contact with new potential respondents. The potential

candidates from Discord had a specific group tag within the Swedish NFT-community channel. This tag was given by the administrators of the channel to those users they deemed to have more knowledge within NFTs than the average user. Therefore, these users were also contacted. Out of 37 contacted potential interviewees, nine agreed to take part in the study.

The data was collected from the respondents using interviews. Before the interviews were conducted, the information retrieved for the literature analysis was summarized in a table. This table was then used as a starting point for formulating the interview questions. The respondents were given a standard set of questions in advance to prepare answers to before the actual interview. The questions are visible in the appendix. Interviewing as a method for data retrieval was motivated as a suitable activity to attain detailed information. In comparison to questionnaires which result in less detailed information (Hedin, 2011). The interviews were conducted in a semi-structured fashion. Which is in accordance with the *exploratory* approach (Bariball et al, 1994). Giving the interviewer the chance to rearrange the order of questions and to ask additional questions in areas the interviewee has more knowledge about (Hedin, 2011; Oates, 2006, p187). The purpose was to initially ask the interviewees their stance on NFTs applied to digital art in hope of finding previously undocumented advantages and disadvantages. Thereafter, by asking questions related to the four elements from the Practice Theory, a deeper understanding of the practice was achieved. Lastly, the interviewees were asked to give their opinion on the advantages and disadvantages that were previously identified in the literature analysis. Depending on the richness of information received additional stakeholders from each group needed to be interviewed in order to fill in the informational gaps. This was in line with Patton's snowball sampling technique (Patton, 1990).

All interviews took place remotely and separately. Two interviews were conducted through text correspondence via email and a chat function. The remaining seven were conducted through audio interviews. All of the audio-based interviews were recorded after receiving consent from the interviewees. The audio recordings were motivated by the possibility of capturing everything said, allowing the full concentration of the interview process from the interviewer's perspective (Oates, 2006, p175). Furthermore, the audio recordings resulted in more detailed answers in comparison to the written interviews. Of the seven audio interviews, only one was conducted with video. Although video interviews can capture non-verbal communication better, the method can also be regarded as intrusive (Oates, 2006, p175).

As a result of precautionary behaviour among some respondents, some were reluctant to use their real names and video camera when participating in the interviews. Therefore, all respondents have been anonymized in this thesis to ensure their confidentiality.

Respondents	Type of NFT stakeholder	Start of NFT engagement	Interview method	Duration (mins)
Respondent 1	NFT artist (Digital Asset Marketplace)	October 2021	Telephone Interview	33:44
Respondent 2	NFT collector (NFT Marketplace)	Late 2021	Discord Audio Interview	36:32
Respondent 3	NFT artist (Digital Asset Marketplace)	April 2021	Email	-
Respondent 4	NFT artist (Digital Asset Marketplace)	Early 2021	Linkedin Chat	-
Respondent 5	NFT enthusiast & Art historian (NFT Marketplace)	Early 2021	Zoom video Interview	37:47
Respondent 6	NFT collector (NFT Marketplace)	September 2021	Telephone Interview	42:48
Respondent 7	NFT artist (Digital Asset Marketplace)	Early 2021	Telephone Interview	43:23
Respondent 8	NFT artist (Digital Asset Marketplace)	November 2020	Zoom Audio Interview	42:50
Respondent 9	NFT collector (NFT Marketplace)	Early 2021	Zoom Audio Interview	41:14

Figure 4: Table of interview respondents

4.4 Methodology for Data Analysis

In accordance with the qualitative data retrieval methods, qualitative data analysis was also used. The main reason was that the data was non-numerical and resulted in words after transcription. Furthermore, since only nine respondents were interviewed a qualitative approach was more suitable than a quantitative approach (Hedin, 2011) (Oates, 2006 p.240).

The theme analysis of the data used was a combination of the two different approaches, both *deductive* and *inductive*. Deductive since the respondents answered questions that were based on theories and previously revealed advantages and disadvantages. Inductive since the respondents also had the possibility to speak freely and thereby new previously unknown information could be discovered (Oates, 2006, p.242).

When the transcription of the interviews was complete, the information in each interview was initially divided into three separate segments in accordance with Oates (2006, p.241). The first segment contained information that was deemed irrelevant for the overall research project. The second segment contained descriptive information which is used to inform the reader of the research context. This information is for example history of the respondents' profession and when they started their NFT engagement. The final segment is information that appeared to be relevant to the research question. The latter segment was thereafter divided into subgroups. Each subgroup resembled a discussed potential advantage or disadvantage with NFTs applied to digital art and the four elements of the Practice Theory. These subgroups were often labelled with a specific citation that summarized the essence of the subgroup. Lastly, the themes of the subgroups were used to identify patterns and overall stances regarding the research question (Hedin, 2011). Thereby resulting in the potential advantages and disadvantages with NFTs applied to art.

5 Ethical Considerations

Ethical considerations have been present throughout the research process using a deontological approach. Implying each act has been individually ethically considered in comparison to a more consequentialist approach (Oates, 2006, p.73). Nevertheless, given the research area, no critical information or ethically questionable approaches adventured the wellbeing of the participants (Bryman, 2012, p135-138). This study has strived to follow the Swedish research council's ethical research principles (Swedish Research Council, 2002). The four requirements are the following:

The requirement of information

All participants of the study are informed of the purpose of the study and the significance of what their participation will result in. Furthermore, they are ensured that the study is highly voluntary and can be interrupted at any time without any consequences.

The requirement of consent

Before participating in the study, the participant's consent is retrieved. Implying that the participant has control of the situation and can withdraw from participating at any time without any repercussions or external pressure to continue.

The requirement of confidentiality

Confidentiality is granted for the participants who have wished to remain anonymous. This implies that the names and other information which trace back to the participant is removed from the study. Furthermore, the data gained from the data retrieval process is stored in a secure environment hindering unauthorized users from accessing it.

The requirement of usage

The participants are ensured that the study and their involvement in the study are solemnly used for the research purpose and will not be utilized for commercial or other non-scientific purposes.

6 Results

In this section, the results of the study will be presented. The first section exhibits the respondents' stance on the previously identified potential advantages and disadvantages of applying NFTs to digital art. The second section presents newly discovered potential advantages and disadvantages with NFTs applied to digital art which the respondents have addressed. The third and final section of the result chapter reveals the respondent's answers in relation to the four elements of the Practice Theory model.

6.1 Respondents' stance on previously identified potential advantages

6.1.1 Royalty Sharing

All the respondents except for one were aligned with NFTs' potential advantage of enabling royalty sharing to artists. This was a highly-regarded factor for both NFT-creators and collectors to start with and continue to interact with NFTs. The incentive for the NFT-creators was the possibility of additional income, whereas, for the collectors, the royalty function enabled fans of the NFT-creator to continuously support financially. Even though the function results in a royalty quota reducing the amount the current NFT-seller otherwise would have earned. The outlier respondent believed it is too easy to copy digital art with NFTs. Therefore, applying NFTs to digital art would not increase royalty sharing.

6.1.2 Exposure to Larger Markets

A clear majority of the respondents agreed that by applying NFTs to digital art a larger marketplace was possible to reach out to. For example, there was not any need for galleries or middlemen to display one's work. One respondent explained this advantage was particularly true for artists coming from smaller domestic markets. Although the exposure has increased, some artists felt the increased need to focus on marketing their artwork to be able to compete with other established artists and big organizations entering the same marketplace. The simplicity of uploading digital NFT-art to certain marketplaces had therefore also generated a lot of "noise" collectors need to filter out in uncurated marketplaces. One respondent disagreed with the potential advantage, indicating NFTs are not enabling a larger market but rather a different type of audience. Explaining the new NFT audience does not necessarily use the same social media platforms in comparison with the previous digital art audience uses.

6.1.3 Versatile Utilization

All respondents, except one who was unsure, agreed NFTs have or are starting to get a more versatile utilization. One collector explained that a couple of their NFTs doubled as a membership pass to specific communities. Enabling collectors to participate in giveaways and to take part in exclusive events restricted to specific NFT-owners. One artist believed the fast increase in competition from other artists incentivizes them to become more innovative with the NFT-technology, thereby pushing the boundaries of other use cases possible with NFTs.

6.1.4 Provenance

Similarly to the previous potential advantage factor, the vast majority agreed traceability and provenance were an advantage with NFTs in comparison to digital art without NFTs. The NFT-creator, Respondent 8 stated; *“...and we know more about the greek sculpture or the roman sculpture, and who the character is and how it was carved almost 2000 years ago. We know more about this sculpture than this jpeg that was made sometime between 2011 and 2014. That is the internet though, it has a very short memory. So having things like NFTs, that become theoretically permanent...then there is an opportunity to have those things”*

Another respondent agreed NFTs can enable provenance with the precondition that the rightful owner of the digital art is also the “minter” of said artwork.

6.2 Respondents’ stance on previously identified potential disadvantages

6.2.1 Storage

Only one respondent agreed that storing the NFT separately from the digital art pieces was a potential disadvantage. Presuming the digital art-file was stored on a centralized domain. Two respondents saw this also as a risk but believed the usage of decentralized storage solutions such as IPFS and ARweave solved the problem related to storage. Three respondents did not perceive this as a disadvantage in comparison to non-NFT art. One respondent suggested the real disadvantage was the lack of knowledge amongst many collectors and creators who presume consolidated storage. The remaining three respondents did not have an opinion on the subject.

6.2.2 Environmental Aspects

A majority of the respondents agreed a disadvantage with NFTs applied to digital art was related to the vast amount of energy required when handling NFTs. Although a general agreement was the consensus method related to block-creation “Proof-of-Stake” would solve this issue once deployed in the future since it requires much less energy than the current “Proof-of-work”-method. As Respondent 7 stated, “*The price of Ethereum is attached to the success and idea of transition*”. Two respondents implied the environmental criticism would be present regardless of NFTs since the Ethereum blockchain has other usages than solely for NFTs. Additionally, another respondent believed it is still debatable whether NFTs have “worsened blockchains”. Furthermore, there are other blockchains which are currently more environmentally friendly. Although as another respondent addressed, some of the more “environmentally friendly” blockchains are based on the Ethereum blockchain to function. Implying a sense of hypocrisy amongst creators and collectors abandoning Ethereum for environmental reasons only to use other blockchains which require Ethereum to function. Nevertheless, two respondents had the mindset it is better to continue improving Ethereum than to discard it entirely. Another frequent argument justifying the environmental factors was by comparing NFTs environmental footprint with physical art. Indicating the environmental footprint from shipping around physical artworks to galleries and collectors was not insignificant either.

6.2.3 Not Blockchain Agnostic

Most respondents agreed on a disadvantage of NFT-applied digital art is the risk of locking into a blockchain which becomes obsolete in the future. Interoperability would therefore be appreciated. A functionality one of the respondents believed would be possible soon. Nevertheless, until then, as Respondent 7 said “*What blockchain will stand the test of time?*”. Two respondents disagreed that the lack of blockchain interoperability was a disadvantage. They implied the interest in NFTs and competition amongst the blockchains will strengthen the longevity of these blockchains. As a result, interoperability will not be needed. One respondent was not knowledgeable in the subject.

6.2.4 Legal Aspects

In general, the majority of the respondents agreed that the current legal landscape for NFTs was an impediment. Although the respondents who agreed had different reasons why they agreed. Firstly, the taxes related to income from NFT sales as cryptocurrencies was unclear in their countries. Furthermore, cryptocurrency is not globally accepted. Additionally, the legal immaturity of NFTs was exemplified through various social media forums where a lot of NFT- buy recommendations took place. Similar recommendations regarding the stock market had as a comparison not been legally acceptable in their country. Lastly, currently, the NFT itself is not legally bound. Nevertheless, one respondent argued there were benefits of NFTs currently being decentralized and thereby not centrally regulated by states. Implying NFTs enabled people from otherwise corruptly controlled countries to make a living off cryptocurrency through digital art. Another respondent did not regard the legal instability of NFTs to be an issue since it was not a requirement from their side when creating NFT applied digital art. Lastly, one respondent indicated legal complications will always arise concerning creative ownership and therefore this impediment is not solemnly restricted to NFT applied digital art. Two respondents did not have knowledge of the legal aspects related to NFTs.

6.2.5 False Belief of Provenance

Most of the respondents agreed a disadvantage with NFT applied digital art was the perceived belief of provenance which can be based on false grounds. Implying one could theoretically upload another creator's work to a blockchain and claim ownership. Nevertheless, many respondents concurred the risk was low and this issue was not restricted to NFT applied art. One respondent described the phenomenon of strong community policing within various NFT groups to handle these problems. One respondent did not agree with the disadvantage of the false belief of provenance. Indicating the probability of one hacking their computer to access their pre-minted digital art was low.

6.3 New Advantages Identified by Respondents

6.3.1 New Revenue Streams

Four respondents believed one of the main advantages of applying NFTs to digital art was the possibility to sell types of digital art which were previously difficult to monetize. This enabled creators to sell new types of artwork and facilitated fans to support their artists which previously was not common before NFTs.

6.3.2 Filter Out Low-Quality Art

One respondent indicated an effect of high gas fees associated with certain blockchains was the benefit of filtering out low-quality art which would otherwise flood the marketplace. Furthermore, the increase in curated NFT-marketplaces was also a contributing factor in increasing the quality of digital art.

6.3.3 Accessible NFT-marketplaces

Another advantage expressed by a respondent was the low entrance fee to join many NFT-marketplaces. Thereby enabling more people to interact with NFTs under the presumption they owned a crypto wallet with cryptocurrency.

6.3.4 Decentralized

As a result of NFTs using blockchain technology, one respondent advocated decentralization of the NFTs as an advantage. Implying not a solemn company controls the NFT blockchains and not having to rely on an institution for transactions to function. Furthermore, hinting NFTs as a stepping stone toward a decentralized internet (web3) with the possibility of owning and controlling your own content in comparison to the current internet where social media companies own the content the user has published.

6.3.5 Increased Online Social Status

Two respondents witnessed the increase of followers on Twitter just because users had changed their profile pictures to hyped NFT digital artworks. One respondent implied, that previously one would show off their status with exquisite physical art in their living rooms, only visible to a restricted number of guests. Now Twitter is the living room and the NFT artwork is visible to everyone accessing Twitter.

6.3.6 Transactional Transparency

One respondent insinuated the importance of transactional transparency related to NFTs. By being able to visualize the number of artworks being sold, the artist cannot hide the number of purchases their artworks receive. The respondent, therefore, declared this incentivizes artists to create digital art which aims to get purchased by their audience.

6.4 New Disadvantages Identified by Respondents

6.4.1 Frauds

A reoccurring disadvantage expressed by most respondents was the amount of fraudulent behaviour regarding NFTs. The concern was directed toward the speed of how quickly the NFT craze had grown. Resulting in many new uneducated NFT consumers entering the market and obtaining NFT applied digital art which quickly decreased in value after the initial transaction. A typical scenario described was when a collector buys an NFT based on the perceived underlying value driven by the promised project and planned roadmap behind the NFT. The underlying project may insinuate the collector can partake in giveaways and other perks in the future. Shortly after the NFTs have been obtained, the project is shut down, leaving the collector with an NFT without its promised utilities. As a result, the value of the NFTs decreases significantly and the collector cannot get refunded their money back. This phenomenon has been dubbed “Rugpull”. The combination of inexperienced users and lack of regulatory functions to help when incidents occur has according to many respondents created a digital “wild west”. Nevertheless, a couple of respondents implied as a consequence of community policing, the number of scams had decreased during the last couple of months.

6.4.2 Bad Reputation

A respondent with a previous digital art background felt their profession had been watered down since NFT applied art had gained traction. Indicating many new so-called “NFT artists” had given their profession a bad reputation. As they were associated with creating collections of 10000-images often known as “Profile Picture”-NFT collections (PFP). These collections contain 10000 similar images with different attributes in the digital images to make each one unique. According to the respondent, these collections rarely had any artistic quality.

6.4.3 Volatile Prices

The high gas fees and volatility in certain cryptocurrencies were described as disadvantages according to one respondent. A lot of research into the NFT-project behind the NFT applied digital artwork was also needed to minimize the risk of their future purchase losing value over time. Therefore, according to the respondent, many NFT purchases were not suitable for those with a restricted budget, low-risk appetite and purchasing with the hope of the value increasing.

6.5 Summarization of Respondents' Answers

The summarization tables represent the following; how the respondents answered on the previously identified advantages and disadvantages and which respondents mentioned new types of advantages and disadvantages with NFT-applied digital art. Each respondent is referred to by a number with the purpose of giving an overview of how they answered during the interviews. The respondents' name corresponding to the number can be found in the appendix.

6.5.1 Summarization of respondents' stance on previously identified potential advantages

Potential Advantages	Agree	Disagree	Other	Don't know/ No answer
Royalty Sharing	(1)(2)(4)(5)(6)(7)(8)(9)	(3)		
Exposure to larger markets	(2)(3)(5)(6)(7)(8)(9)		"Rather, a different market not larger" (1)	(4)
Versatile Utilization	(1)(2)(4)(9)(5)(6)(7)(8)			(3)
Provenance	(1)(2)(4)(5)(6)(7)(8)(9)			(3)

Figure 5: Summarization of respondents' stance on previously identified potential advantages

6.5.2 Summarization of respondents’ stance on previously identified potential disadvantages

Potential Disadvantages	Agree	Disagree	Other	Don’t know / No answer
Storage	(5)	(2)(3)(9)	There is a risk with how NFTs are stored, but peer to peer storage like IPFS/ ARweave is a step in the right direction (7)(8)	(1)(4)(6)
Environmental Aspects	(1)(2)(3)(5)(6)(9)	(7)(8)	Still up for debate if NFTs have “worsened blockchains” (4)	
Not Blockchain Agnostic	(2)(5)(6)(7)(8)(9)	(1)(4)		(3)
Legal Aspects	(2)(5)(7)(8)(9)		It’s okay that it’s a bit unstable right now, legally-foolproof is not a requirement (1) There will always be complications when concerning creative ownership (4)	(3)(6)
False Belief of Provenance	(2)(4)(5)(6)(7)(8)(9)	(1)		(3)

Figure 6: Summarization of respondents’ stance on previously identified potential disadvantages

6.5.3 Summarization of newly identified advantages based on respondents’ output

Newly Identified Advantages	For the Creator	For the Consumer/ Owner	Sources
New revenue stream Improved the possibility to sell certain digital art formats and make a living out of it	X		(8)(3)(5)(9)
Filter out low-quality art Expensive gas fees are effective in filtering through “noise”	X	X	(8)
Accessible NFT marketplaces Low start-up fees to join NFT marketplaces	X	X	(2)
Decentralized No government or central power has full control of NFT-marketplaces	X	X	(1)
Increased online social status NFTs give users social status on social media platforms	X	X	(4)(5)
Transactional transparency Puts pressure on NFT-creators to succeed with NFT project		X	(6)

Figure 7: Summarization of newly identified potential advantages based on respondents’ output

6.5.4 Summarization of newly identified disadvantages based on respondent’s output

Newly Identified Disadvantages	For the Creator	For the Consumer/ Owner	Sources
Frauds Fraudulent behavior occurs frequently	X	X	(1)(2)(4)(5)(6)(8)(9)
Bad reputation A lot of low-quality digital art gives “fine art artist” a bad reputation	X		(8)
Volatile prices Expensive gas fees and volatile prices hinder many from buying NFTs		X	(8)(5)

Figure 8: Summarization of newly identified disadvantages based on respondent’s output

6.6 NFT-Applied Digital Art in Relation to Practice Theory

In this section, the respondents’ answers will be sorted based on the four Practice Theory elements created by Gram-Hanssen (2010). The distribution of the elements will show aspects unique to NFT-applied digital art which is not apparent in Non-NFT digital art.

6.6.1 Engagements

The motives to start creating and consuming NFTs varied amongst the respondents. A common theme from both types of stakeholders was financial-related incentives. A couple of the NFT creators had previous digital art backgrounds. This included motion art, often common during visual shows on festival stages. When events shut down as a result of Covid-19, the digital art creator turned to NFTs to monetize their digital artworks. Other creators witnessed the general difficulty of getting paid as digital artists and therefore saw NFTs as a practice which enabled continuing with their profession. Another motivation expressed by NFT creators was the creational freedom NFTs had enabled when intermediary stakeholders had been removed from the equation. In comparison to the previous commission-based art creation.

A respondent who was an NFT-consumer, admitted the initial reason to start with NFT was the perceived ease and velocity of earning money through buying and selling NFTs. This motive of initial engagement with NFTs was confirmed as common by most respondents. Furthermore, most of the NFT-collector respondents rarely bought an NFT for the sake of the artwork but rather for the perceived underlying value. Although the underlying financial incentive remained, one NFT-collector motivated their continued engagement based on the community surrounding their NFT-digital artwork. By obtaining specific NFTs the NFT-collector had been introduced to communities with participants with similar NFTs. These communities acted as a “haven” for the NFT collector to discuss NFT-related subjects which otherwise would have been a neglected or polarized discussion amongst their friends and family.

Another motive to engage with NFT applied digital art was related to the technical curiosity amongst the respondents. Some respondents had previous experience within cryptocurrencies and were interested in further experimenting with the blockchain-technology after recommendation from peers. After the initial engagement, some respondents mentioned that the continuous engagement was motivated by perceived future technical enablement with NFTs.

Additionally, one respondent also described motives for leaving the NFT-space. The main motive either regarded the NFT-collector having early on lost money or being unable to convert back a certain type of cryptocurrency back to Fiat money.

6.6.2 Technologies

The respondents with NFT-creator backgrounds agreed the artistic creational process of creating digital art versus NFT-applied digital art did not require any different hardware or software to create the actual digital art. The main difference for both creator and collector-stakeholders was related to the NFT of digital art. In order to publish and purchase NFT-digital art, one has to own a crypto wallet containing cryptocurrency. These crypto wallets were also required when creating accounts on NFT-marketplaces. The respondents were unanimous in acquiring a crypto wallet was a straightforward procedure. Not much different from obtaining the Id-authorization app “BankID” in Sweden or creating a social media account. Additional technology such as a physical wallet-key to enable two-step

authentication for their crypto wallet was also recommended when having high-value NFT-collections. Nevertheless, a difficulty experienced by two Swedish collectors was related to crypto exchanges. Finding banks accepting cryptocurrencies had been an impediment in their experience. The respondents also advised access to various NFTs-spaces on Twitter and closed Discord channels to learn more about NFTs in general. Additionally, the choice of blockchain platform was based on varying aspects, such as economical, and environmental reasons in combination with how well known these blockchains were.

6.6.3 Institutionalized Knowledge

In general, most of the respondents had experience with cryptocurrency before they interacted with NFTs. Nevertheless, the respondents had different views regarding the amount of knowledge required to interact in these practices. One side believed little knowledge is required to understand the basics of NFTs. Referring to the willingness to learn about the subject is a larger impediment than the amount of knowledge itself. Suggesting a lot of information was easily accessible online. The other side insinuated a high knowledge threshold when entering the NFT space. Implying a new creator/collector needs knowledge in many areas to navigate in the space. Respondents deemed, regardless of stakeholder, knowledge within the following areas is required when interacting with NFTs:

- Knowledge about cryptocurrency and crypto platforms
- Knowledge about how a blockchain works
- Knowledge about typical scams and threats to look out for
- Knowledge about how gas fees work when minting and transferring an NFT

An additional area a respondent with an NFT-creator background addressed was knowledge about marketing. Since intermediary stakeholders such as gallerists and promoters were not needed with NFT applied digital art, artists need to learn how to promote themselves to stand out amongst other NFT-artists. Many respondents also witnessed the rapid innovation pace within NFTs and crypto-technologies. Therefore, there were constantly new features to learn about.

As a result of the quick popularity regarding NFTs, many respondents indicated a low level of knowledge among the average NFT-participant. A respondent elucidated the misconception many NFT-collectors experienced when obtaining an NFT only to understand in hindsight, in

most cases, the legal rights to the NFT remain with the NFT-creator. Causing confusion and frustration amongst the buyers.

Most respondents used NFT-oriented terminology when describe NFTs and their relation to them. Words such as “minting” and “gas-fees”, which have previously been described in this thesis, occurred often. To those unfamiliar with the terminology, understanding the what the NFT-stakeholder meant might have been difficult. The terminology indicated specific knowledge in communication is needed.

6.6.4 Know-how and Embodied Habits

A general habit many respondents expressed was being careful online. Multiple respondents mentioned, for example, that messages containing files from unknown sources were never accessed and NFT-projects were thoroughly checked before investing in a specific NFT. Furthermore, one respondent compared NFTs to stocks, indicating investing in the project and creators behind the NFT is similar to investing in a company’s stocks. Where the underlying value is based on how desirable the NFT applied digital art was within the community. Most respondents agreed a fad-driven behaviour motivated by a perception of quick money was common within the NFT-space. They described how impulsiveness often led to unintelligent purchases with the ultimate goal of gaining social status online.

Regarding the discussed potential disadvantages, many respondents expressed a positive stance on NFTs, reassuring current impediments will be solved in the future. One respondent referred to the current NFT-space as a “new builder age” forgiving the current difficulties of NFTs with the assurance of them being solved soon. Regarding the general acceptance of NFTs, one respondent believed the generation growing up with online in-game purchasing had grasped the concept of NFTs and digital assets quicker than previous generations. As they were already experienced within the area.

7 Analysis of Results

This section analyzes the respondents' stance on the advantages and disadvantages of NFT applied digital art. Thereafter the practice of NFT applied digital art is analysed from the theoretical lens of the Practice Theory.

7.1 Advantage and Disadvantage Factors Respondents Agreed On

In general, as eight of nine respondents either owned or created NFTs, the overall standpoint towards NFT applied digital art was positive. As proven in the results section, the factors related to the previously identified advantages with NFT applied digital art were in adherence with most of the respondents' views on the subject. Nevertheless, some factors regarding disadvantages were also widely accepted. The following previously identified advantages and disadvantages were agreed on by a majority of the respondents.

- The advantage of royalty sharing, as previously identified by Wang et al (2021), Popescu (2021), Kugler (2021) and Burks (2021).
- The advantage of versatile utilization, as previously identified by Wilson et al (2021).
- The advantage of provenance, as previously identified by Popescu (2021).
- The advantage of exposure to larger markets, as previously identified by Wilson et al (2021).
- The disadvantage of the false belief of provenance, as previously identified by Valeonti et al, (2021).

An insight is the majority of the respondents agreed on the factor of proving provenance as an advantage with NFT-applied digital art. Although, when the disadvantage factor regarding false belief in provenance was discussed, a majority also agreed on its perceived risk as well. Indicating one of the advantages could also become a disadvantage if the uploader of the NFT applied artwork is not also the rightful creator. Nevertheless, some of the respondents agreed with the hypothetical scenario but implied the risk was low.

Another insight in relation to the overall positive stance towards NFT-applied art was the chosen examples by some respondents when motivating their standpoint. Some respondents used uncannily similar examples when motivating the use of NFTs. Indicating some key example-arguments are utilized within the NFT-space when discussing the advantages and motivating the use of NFT-applied art.

A previously unidentified disadvantage with NFT-applied art which a majority of the respondents agreed upon was the frequency of fraud-like behaviour exhibited within the NFT-space. The combination of increased popularity in NFTs, inexperienced collectors and a belief in quick profits contributed to fraudulent behaviour. This resulted in users being scammed financially. This environment impacted the behaviour of certain respondents. One collector, as a result, only obtained NFTs from well-renowned creators and companies/organizations which were known before NFTs existed. This was motivated by the assumption of the value of the creator's brand was not worth the risk of damaging in relation to the possible profit to be gained by scamming the collectors. From a creator's perspective, the risk of fraudulent behaviour enhanced precautionary behaviour. This was expressed in two ways. Firstly, by not opening files from strangers due to the risk of getting infected by malicious software. Secondly, by reducing the number of possible direct communication channels to the artists. As a result, few NFT-creators had enabled the possibility to receive direct messages via for example Twitter.

7.2 Advantage and Disadvantage Factors Respondents Did Not Agree On

The one factor most respondents disagreed with was a disadvantage identified by Wilson et al, (2021). The factor was regarding how the actual NFT and the jpeg file were stored separately. Only one respondent agreed with the disadvantage. Although, the same respondent further elaborated this factor is only a disadvantage if the jpeg is stored in a central database. Suggesting the risk of losing the jpeg would then be apparent. The rest of the respondents which disagreed motivated the various peer to peer storage systems as a possible solution to the problem. Indicating most NFT-marketplaces use those types of decentralized systems already. Therefore, this disadvantage may have been solved since Wilson et al (2021) had published their paper. Nevertheless, a third of the respondents did not have an opinion or knowledge about how the NFTs and corresponding digital artwork was stored. Suggesting a possible knowledge gap among NFT-stakeholders.

7.3 Advantage and Disadvantage Factors Respondents Agreed Differently On

A majority of the respondents agreed on eight out of nine of the previously identified potential advantages and disadvantages. Although, the following three potential disadvantage factors received a wider spread of opinions than the rest.

- The disadvantage regarding the environmental aspects, as previously identified by Valeonti et al, (2021) and Pipkin (2021).
- The disadvantage regarding the legal aspects, as previously identified by Vallabhaneni et al, (2021), Giancaspro (2017) and Tatar et al, (2018).
- The disadvantage regarding NFTs not being blockchain agnostic, as previously identified by Sherman (2021) and Valeonti et al, (2021).

The potential environmental disadvantages with NFT applied digital art were a factor which divided the respondents' answers. A majority of the respondents agreed currently there were negative environmental aspects associated with NFTs mainly due to Ethereum's current block creating- algorithm. Nevertheless, the seriousness of this factor varied among the respondents. Some indicated the environmental aspects are a big problem with NFT applied digital art whilst others said the environmental aspects will be solved soon in the future. Similar beliefs in a future solution have been addressed by Valeonti et al (2021) and Pipkin (2021). Although, the authors remained sceptic since the promise of a future solution to the environmental factor has been around nearly as long as Ethereum itself (Pipkin, 2021).

Most respondents also agreed on the disadvantage factor related to legal aspects with NFT applied art. Due to its legal immaturity, there were many different legal aspects that the respondents raised. The answers thereby strengthened the questionable legal enforceability as previously raised by Giancaspro (2017). Nevertheless, not all respondents knew about the current legal landscape for NFTs implying a possible knowledge gap amongst the respondents. Furthermore, not all saw legal immaturity as a negative aspect of NFTs. Rather the decentralized approach was a factor which appealed to some of the respondents. Also, since the development of legal enforceability was not aligned with the innovation pace, community policing had taken over the interim role of justice to reduce theft and scams in the NFT-space.

The lack of blockchain agnosticism was also a factor most respondents concurred was a disadvantage. Nevertheless, similar to the environmental aspects, some respondents did not worry too much about this factor. Suggesting this potential disadvantage, like many others, would be solved in the future. This mindset influenced many answers related to the factors of potential disadvantages. The underlying argument indicated that the previous pace of innovation within NFTs would continue to solve the current and future impediments.

Regarding the number of new advantage and disadvantage factors, many were supported by at least one respondent. The general positive stance towards NFTs was thus visible based on the amount of new potential advantages the respondents expressed during the interviews. Although, except for the factors related to fraudulent behaviour, no new factor had the support from a majority of the respondents. Nevertheless, the respondents may have concurred with the new factors had they been asked explicitly. Therefore, based on the outcome of a clear majority of the newly identified factors, no definitive standpoint from the respondents is addressable.

7.4 Analysis of Practice Theory Elements

The practice of creating and collecting NFTs is exercised by multiple people. This, accordingly, adheres to Schatzki's (2018) first cornerstone of a practice. Furthermore, the creation of NFT applied art and their collection is intertwined with many other practices, creating constellations of practices. Thereby adhering to Schatzki's (2018) second cornerstone. The third cornerstone related to social phenomena can also be traced to creating and collecting NFTs. Since large organizations are involved with the practice. The last cornerstone, related to the "undefined knowledge" (Schatzki, 2018), is apparent through the four Practice Theory elements as previously presented by Gram-Hanssen (2010). Certain interpretations have been made when analyzing the practice of NFT-applied digital art through the perspective of the elements. This is motivated since the respondents may not explicitly say or are not consciously aware of underlying norms which influence their actions and why.

7.4.1 Engagements

Analyzing the data from the respondents indicated a couple of motives that drove the practice of creating and collecting NFT-applied digital art. The two main motives to engage with NFTs were financially related and curiosity about the technology.

The financially-oriented motive was driven by several aspects. For example, the perceived possibility to earn a lot of money at a fast pace was a common initial motive amongst many new joiners within NFT. Collectors engaged in NFTs in a similar way as stocks, with the purpose of turning a quick profit. Another money-oriented motivation for digital art creators was due to Covid-19. Thereby incentivizing artists to earn an income without the need for commission. Resulting in more creative freedom according to one respondent. Nevertheless, for the NFT-applied digital artwork to get sold, the artwork still needs to appeal to the audience. In other words, commission-based artwork could be interpreted as being replaced by audience-driven artwork.

NFTs are a relatively new type of crypto-technology. Hence, the typical user is assumed to be more technologically savvy than the average art collector and creator. The general technical interest was also confirmed amongst most of the respondents as an explanation to start the engagement with NFTs. An overall excitement about the potential possibilities of NFTs was also apparent. Indicating NFTs as a plausible stepping stone for a decentralized internet (web3). This belief kept respondents motivated although current NFT impediments were present. The curiosity related to how technology had further evolved art in the digital space was also a reoccurring theme of why art enthusiasts started to engage with NFTs.

7.4.2 Technologies

The technologies used within the NFT-applied digital art creation and collection are aligned with Tondl's (1974) second and third stages of material advancements in relation to human interaction. To clarify, the creation of the various NFT-related accounts necessitated to partake in the practice requires human interaction with machines (computers/phones) powered by non-human energy sources (electricity). The creation of the NFT-applied digital art can also be done with second stage technologies. Unless, the process is automated, as in for example NFT-projects with 10000-artworks. If the process is automated, then the technology adheres to Tondl's (1974) third stage of material advancement. Implying the practice includes

machines without any human interactions. Since many of the activities related to NFTs are automated, the average NFT-stakeholder does not have the knowledge of what happens when the NFT is created. Additionally, how the NFT and the digital artworks are stored. The possibility of lowering the threshold to attract more users could have also blurred out the otherwise previously required knowledge to interact with NFT applied digital art.

The choice of technologies the respondents used varied. The external societal pressure from an environmental perspective did influence some respondents to use more environmentally friendly blockchains for their NFTs. Additionally, the encouragement amount NFT-users to be careful and take precautionary steps to minimize the risk of getting hacked was also apparent. Leading to additional technologies such as physical wallet keys to enable two-step authentication when accessing their digital wallets.

7.4.3 Institutionalized Knowledge

To operate with NFTs in a safe way, knowledge within many areas is needed. The concept of NFTs is relatively new and, as previously stated, caught the general public's attention just over a year ago. Consequently, many users in the space do not have the necessary knowledge before engaging. Resulting in uneducated purchases, financial losses and a flourishing environment for fraudulent behaviour. Nonetheless, for the knowledge-seeking user, a significant amount of tutorials and documents was accessible to acquire the relevant knowledge.

A majority of the respondents had previous experience engaging with cryptocurrency. Thus, the concept of blockchain and decentralized transactions was not foreign. As a result, the additional knowledge required to operate and understand NFTs was not as substantial as for users without previous experience or knowledge within blockchain and cryptocurrencies. Nevertheless, not all respondents had knowledge of the surrounding associated fields for NFTs such as the environmental impact and legal aspects. Additional knowledge most respondents expressed, which was also commonly present in Discord channels and Twitter threads, was the terminology associated with NFTs being used. Thereby creating a sense of belonging amongst the users who communicated with the newly defined words.

7.4.4 Know-how and Embodied Habits

A frequent habit most users expressed and demonstrated was related to how careful they were online. Certain respondents with impressive NFT-collections did not even disclose their real names and faces due to the risk of getting hacked. Nevertheless, they enjoyed showing off their NFT-collections using them as profile pictures on Twitter and Discord. Thereby boasting their online social status through their internet persona whilst remaining anonymous in the “real” world.

The underlying urge of showing status online and doing so through NFTs is a reason for the impulsive behaviour of certain users engaged in the NFT-space. The desire to attain certain NFTs that the NFT-community had deemed as valuable is similar to other objects society has labelled as valuable. Therefore the value of NFTs is dependent on the community which creates and collects them. As a result, the community stands to gain by continuously growing to increase the perceived value of NFTs. Some respondents even described the NFT community as a welcoming place for new joiners. Which could be interpreted as a predetermined action from the NFT-community to increase their userbase.

Another habit the users within the NFT-community have grasped is the concept of buying digital assets. According to one respondent, this concept is more accepted in generations which have grown up with in-game purchasing. Where the users buy digital assets for their in-game avatars which otherwise have no real-world use. The acceptance of the concept of buying digital assets is paramount when engaging in the practice of NFTs. As the habit can be seen as unusual, it may take a while to comprehend and accept. As a result, polarized discussions between NFT-enthusiasts and those who do not agree with the concept occur. Consequently, the NFT-enthusiasts may refrain from discussing the subject with those who question the purpose of NFTs. Thereby possibly, creating a bubble amongst people with like-minded opinions of NFT applied digital art.

8 Discussion and Conclusion

This section commences with a discussion of the study's results. Then the relevance of the paper and its research contributions. Thereafter, the limitations and future areas of study are presented. Lastly, the conclusion of this study is presented.

8.1 Discussion

A general view identified amongst the respondents was a positive stance towards NFT applied digital art. Albeit, all respondents except one were financially involved with NFTs. Therefore, an unbiased outcome from the respondents is not guaranteed. The financial motive amongst NFT-stakeholders was a common causality to engage with NFT applied digital art.

Nevertheless, had not financial gains been attainable, one can wonder how interested the general public would have been in NFTs. Additionally, what technological advancements within NFTs would have been achieved had not perceived financial gains been plausible?

Even though the overall positive stance towards NFT applied digital art, there were some disadvantages the respondents perceived with the current state of NFT applied digital art. Nevertheless, since eight out of nine respondents were still involved with NFT applied digital art, they obviously believed the potential advantages outweigh the potential disadvantages. Although, based on the output of the respondents, there is reason to believe some of them were engaged with NFTs based on their perceived future potential. Meaning the current impediments such as environmental aspects, blockchain agnosticism and legal aspects, would be solved in the future. Had the technological advancements stopped, with the current technological state of NFTs, including the prevailing advantages and disadvantages been enough to retain the users in the long run?

Referring back to the current fraudulent impediments physical art is affected by. This study indicates provenance and authentication are possible to achieve with NFTs. Nevertheless, it may not be guaranteed, as the previous transactional history before minting the artwork to the blockchain is not possible to verify. Accordingly, a layer of trust, similar to physical artwork which does not have NFTs, will be apparent. Assuring the uploader of the NFT applied artwork is also the creator of the artwork. Regardless, NFTs facilitate the possibility to achieve provenance and authentication. Which otherwise is difficult to verify with physical art and nearly impossible with digital art without NFTs. This layer of required trust could also

be the reason why other types of fraudulent behaviour within NFTs have prevailed. The misconception of using a blockchain technology which in itself does not require trust to operate may have misled new users to believe in the instant authenticity of the NFT-artwork. More advancements in general regarding user authentication online are needed to reduce the amount of fraudulent behaviour and required trust to operate with NFT applied digital art. First steps have been made on many platforms. Nevertheless, the use of verified profiles and other authentication methods still have a far way to go before this issue is solved.

The use of Practice Theory has given an understanding of the NFT-applied digital art practice by explaining actions through the four different elements as previously visualized by Gram-Hanssen (2010). The theory has not necessarily resulted in new advantages and disadvantages. Rather, it has highlighted an intersection between personal motives such as financial motives and actions driven by social structures, such as social status and carefulness online. The theory gives a plausible explanation for the use of the technology. Suggesting the technology might not be used for its actual advantages and disadvantages. Rather, the technology is used based on the individuals perceived advantages which drives the continuous usage.

Had a different theoretical framework been chosen, such as an economic or psychological framework, then another outcome may have been presented. Nevertheless, had for example, Transaction Cost Theory (Williamson, 1991) been utilized, an ambivalent result may have been produced. NFTs may have improved the transactional cost as a result of blockchain technology. Although, the current state of NFTs still implies risks such as the false belief of provenance. Resulting in a more efficient but not necessarily secure practice.

8.1.1 Relevance

This paper is relevant for potential NFT-stakeholders to understand the current advantages and disadvantages of applying NFTs to digital art. Thereby the factors can determine whether engaging with NFTs is currently advisable. The outcome also shows plausible underlying motives the users within the NFTs space have. The study has significant relevance as there are few academic papers related to NFTs where actual users of the technology have been included. Furthermore, to my knowledge, no other NFT-related paper utilizes Practice theory

as the theoretical framework. This combination has resulted in a greater understanding of opinions from stakeholders operating within the NFT-space and potential improvement areas.

8.1.2 Limitations

The study included nine respondents and eight of nine were financially involved with NFT applied digital art. Thereby the opinions received are not free from bias. A different outcome may have been evident had more respondents with knowledge in the area with no financial incentive been involved in the study. Unfortunately, finding respondents with this background proved to be an impediment during the data collection.

Another limitation is related to the number of respondents. Had more respondents from both NFT-stakeholder backgrounds been represented, then a more generalizable outcome would have been presentable. Although, towards the end of the data collection, a feeling of saturation was noticeable. Indicating similar answers from previous respondents had been expressed. Therefore, the outcome of the paper should be generalizable to a certain extent.

8.1.3 Future Research Areas

As previously mentioned, not all respondents were aligned on certain facts regarding NFT applied digital art. Indicating a potential knowledge gap amongst NFT-stakeholders. Future studies including an inventory of the current knowledge landscape would benefit larger NFT-stakeholders to comprehend where additional educational resources are needed in the NFT-space. Additionally, this paper only investigate NFTs applied to digital art. There are many other areas where NFTs are applicable and other possible factors can be examined.

Due to the perceived rapid innovation pace within NFTs, recreating similar studies in the future would be valuable to see which potential disadvantages are solved and which remain to be solved. Analyzing the future underlying incentives to continuously engage with NFT-applied digital art may also differentiate from its current motives.

8.2 Conclusion

The research questions this study aimed to answer through the perspective of NFT-creators and collectors, were the following:

1. What are the potential advantages of applying NFTs to digital art?
2. What are the potential disadvantages of applying NFTs to digital art?

The potential advantages a clear majority of the respondents supported were the following: the advantage of royalty sharing, versatile utilization, provenance, and exposure to larger markets. Nevertheless, there are also potential disadvantages associated with NFT-applied digital art. The respondents indicated the following impediments; The disadvantage of false belief of provenance, fraudulent behaviour, environmental aspects, legal aspects and not being blockchain agnostic.

Apparent in the results, there are plenty of potential advantages and disadvantages with NFT-applied digital artwork which are not applicable to Non-NFT digital art. Nevertheless, many issues are still to be solved with the current state of NFT-applied digital art. Through the chosen Practice Theory framework an understanding of why users have engaged in the practice of collecting and creating NFT-applied digital art. The main motives have been financially related and curiosity about the technology. This may explain why the current engagement in NFT-applied digital art has persevered despite the current potential disadvantages as previously discussed.

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10.2 Appendix

10.2.1 Interview Questions

Open questions

What is your experience using NFTs?

What potential advantages do you perceive with NFTs applied to Digital Art?

What potential disadvantages do you perceive with NFTs applied to Digital Art?

What motivates and engages you to apply NFTs to Digital Art?

What knowledge is required to create and buy NFTs applied to Digital Art?

What technology is required to create and buy NFTs applied to Digital Art?

Is there a difference in the creation process between creating “normal” digital art and NFT digital art?

Closed questions

Royalty Sharing

Do you think that by applying NFTs to digital art, the probability for creators to receive royalties will increase?

If YES why? If NO why?

Exposes to larger markets

Do you think that by applying NFTs to digital art the possibility of accessing larger markets increases when you can sell through NFT marketplaces?

If YES Why? If NO why?

Versatile Utilization

Do you think that NFT tokens will have a more versatile utilization in the future than being applied to digital art?

If YES why? If No why?

Provenance

Do you think that chances of achieving provenance increases when applying NFTs to digital art? If YES why? If NO why?

Storage

Do you think there is a disadvantage regarding if the digital art and the NFT is stored separately?

If YES why? If NO why?

Environmental aspects

Do you think that a disadvantage with NFTs is its environmental impact?

If YES why? If NO why?

Not Blockchain Agnostic

Do you think that it is a disadvantage that most NFTs applied to specific blockchain cannot be moved to another?

If YES why? If NO why?

Legal Aspects

Do you think that the legal uncertainty with NFTs is a disadvantage?

If YES why? If NO why?

False Belief of provenance

Do you believe applying NFTs to digital art can give a false belief of provenance since the artwork can change ownership before minting?

If YES why? If NO why?