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**SCHOOL OF INDUSTRIAL AND INFORMATION ENGINEERING**  
**MSc. in Management Engineering**

**Applications of Non-fungible tokens (NFTs) and  
the Intersection with fashion luxury industry**

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## **Abstract**

Non-fungible tokens (NFTs) based on the blockchain technology has recently got skyrocketed attention during the past one and a half year especially during the pandemic. Blockchain based tokens possess characteristics like ownership, transparency, authenticity, and scarcity. The speculative aspect of this concept has resulted into the jaw-dropping sales of digital assets in exchange of cryptocurrency. Multiple platforms like OpenSea, Rarible and Nifty gateway have made it quite accessible to mint, buy and sell NFTs. Non-fungible tokens include art, music, collectibles, virtual fashion, in-game items, and memes etc. Several real-life examples have been studied to enlighten the importance of NFT in different sectors. Following the trend, fashion luxury industries have also jumped into this crypto circle. This has been a win-win situation for brands as well as end-users. Luxury brands have expressed themselves in this creative digital market and have extended their business domain by collaborating with other entities to attract the tech enthusiasts. With this collaboration, fashion luxury brands i-e Gucci, Louis Vuitton, D&G and Burberry etc. has been able to penetrate into art, gaming sector and virtual fashion etc. Exemplary initiatives by the brands include launch of digital clothing in the gaming space, new iconic characters, virtual sneakers, 3D art galleries and other distinctive items. Therefore, NFTs have been source of exclusivity, ownership resulting into the brand loyalty. Due to the extensive use of social media, luxury brands have brought forth the opportunity of virtual shopping where customers can buy the garments, take photo, and post it on their profiles without any urge to purchase it physically. Fashion luxury NFTs contribute to the sustainable development in terms of ethical production which cuts down the use of natural resources. No wonder, it's the time for luxury fashion industry to be ready for the metaverse-based future by bringing this innovative concept to life.

## **Astratta**

I token non fungibili (NFT) basati sulla tecnologia blockchain hanno recentemente ottenuto un'attenzione alle stelle durante l'ultimo anno e mezzo, specialmente durante la pandemia. I token basati su blockchain possiedono caratteristiche come proprietà, trasparenza, autenticità e scarsità. L'aspetto speculativo di questo concetto ha portato alle vendite a capogiro di beni digitali in cambio di criptovalute. Molteplici piattaforme come OpenSea, Rarible e Nifty gateway hanno reso abbastanza accessibile la coniazione, l'acquisto e la vendita di NFT. I token non fungibili includono arte, musica, oggetti da collezione, moda virtuale, oggetti in-game e meme ecc. Diversi esempi di vita reale sono stati studiati per illuminare l'importanza dei NFT in diversi settori. Seguendo la tendenza, anche le industrie del lusso della moda sono saltate nel cerchio delle criptovalute. Questa è stata una situazione vantaggiosa sia per i marchi che per gli utenti finali. I marchi di lusso si sono espressi in questo mercato digitale creativo e hanno esteso il loro dominio commerciale collaborando con altre entità per attirare gli appassionati di tecnologia. Con questa collaborazione, i marchi di lusso della moda, cioè Gucci, Louis Vuitton, D&G e Burberry ecc. sono stati in grado di penetrare nell'arte, nel settore dei giochi e nella moda virtuale ecc. Le iniziative esemplari dei marchi includono il lancio di abbigliamento digitale nello spazio di gioco, nuovi personaggi iconici, scarpe da ginnastica virtuali, gallerie d'arte 3D e altri articoli distintivi. Pertanto, le NFT sono state fonte di esclusività, di proprietà e di conseguente fedeltà al marchio. A causa dell'ampio uso dei social media, i marchi di lusso hanno portato avanti l'opportunità dello shopping virtuale in cui i clienti possono comprare i capi, scattare foto e postarle sui loro profili senza alcun bisogno di acquistarli fisicamente. La moda di lusso NFT contribuisce allo sviluppo sostenibile in termini di produzione etica che riduce l'uso di risorse naturali. Non c'è da stupirsi, è il momento per l'industria della moda di lusso di essere pronta per il futuro basato sul metaverso portando questo concetto innovativo alla vita.

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# Chapter-1

## 1. Introduction

### 1.1. General Overview

This study intends to highlight the concept of non-fungible tokens (NFTs) and its applications. Initially the cryptocurrencies were introduced in the market as an alternative (digital) option to trade and make transactions. Blockchain technology has been widely used for these types of applications by using different platforms (i-e permissioned and public). Once the cryptocurrency was successfully registered and made legal, people started taking interest into this naïve concept which led the foundation of non-fungible tokens. This work intends to explain the main concepts behind NFT buying, selling and its applications into different domains. Hence this report has been divided into 7 chapters. First chapter is about the main objectives, significance, and structure of this study. Second chapter is focused on developing the concept of NFT including its definition, background and technology used for it. Chapter 3 is designed to explain the functionality of NFTs, how NFTs are minted and sold, which platforms are used for NFTs trading and what's the motivation behind the surge of this concept. Chapter 4 & 5 are pondering over the practical applications of NFT, mainly focusing on the case studies pertaining to the fashion luxury industry. What has been the impact of NFT in fashion and how brands are planning to implement this blended concept of digital and physical art.

Lastly, the report will highlight the future of NFT in fashion luxury industry which is predicted on the basis of current trend of sales of NFT along with the concluding remarks regarding the analysis of NFT and its applications.

### 1.2. Aim & Objective

This study is focused on answering these four basic questions which include:

- What is the concept of NFT and why it has been booming recently?
- How does the NFT work? And who intends to buy it?
- What are the main applications of NFT?
- What has been the impact of intersection of NFT with fashion luxury industry?

### **1.3. Significance of the study**

Non-fungible tokens are evolved based on the concept of cryptocurrency and decentralized finance. Conventional trading involves a lot of players in between, paperwork and other formalities to complete the single transaction. Even digital payment systems are authorized by the banks which needs approval. The concept of blockchain has been used for the transparent and autonomous transaction which is visible to public. That's the reason the blockchain was used as backbone for the NFTs minting. NFTs can only be traded in exchange with the any cryptocurrency and therefore is termed as the cousin of NFT. The main advantage of NFT is efficiency of Market. It provides the seamless conversion of physical to digital assets without the interference of any intermediaries.

NFTs provide an outstanding opportunity to the new content creators to make a lot of money by directly approaching to the public and show case their talent. It is also a crucial tool for established artists or creators with large fan base on different platforms throughout the social media. Copying the art has been a significant hurdle for all the artists. It is easier to make convincing copies of the hard work created by any artist and hence the value of the original art reduces. Therefore, with the use of NFT it's impossible to copy or counterfeit the masterpieces created by the creators since the unique art is assigned to a single NFT which can never be replaced or changed.

NFTs are about to change the world of fashion luxury to a greater extent. Main element to consider the intersection of NFT and fashion luxury is *Scarcity*. Fashion corresponds to NFT in the sense of collectibles. In contrast to the physical scarcity, NFT enables the customer to take part into the self-expression of digital asset. The



digital asset is the identical twin of physical product which gains more value. The evolution of the NFT into fashion sector has gained a lot of attention in previous months and therefore it's highly important to understand the concept of NFT, its functionality, uses and some case studies to know-exactly where this concept is leading world towards.

## 1.4. Report Structure

This study follows the structure illustrated in following figure:

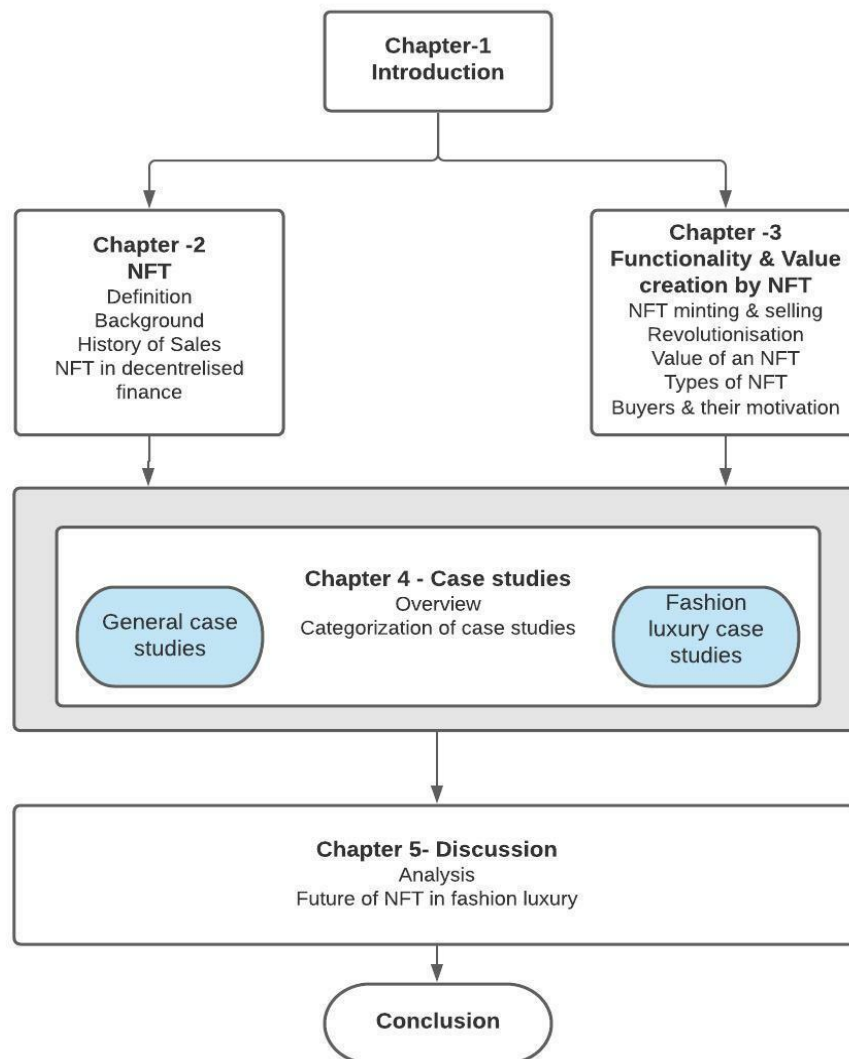


Fig. 1.4. Thesis Structure

## Chapter-2

### 2. Non-fungible tokens (NFTs)

#### 2.1. Definition

A non-fungible token is a digital token or asset that links the ownership to unique physical or digital items for instance art, music, videos etc. and a license to use the assets for a specific purpose. It is a unique and non-interchangeable unit of data which is stored on a digital ledger platform called blockchain which gives the NFT a verified and public proof of ownership. A non-fungible token provides an authenticity certificate which ensures its uniqueness and unchangeability. An NFT is built on a digital ledger platform i.e., blockchain that is also the underlying technology for the cryptocurrency. Due to the principles of cryptography, an NFT can never be changed, adjusted, and stolen and that makes the blockchain unique. In order to develop understanding of NFTs, it would be necessary to get familiar with the concept of fungibility.

**Fungible items:** These are the items that can be exchangeable because they are identical, and their values define them rather than their unique properties. For instance, the currency i.e. digital and physical is fungible because \$1 USD or 1 BTC can be exchanged with another one.

**Non-Fungible items:** these are the items that are not interchangeable because each token has unique characteristics and each one of them has different worth.

NFT can be considered as the modern-day collectibles and represent a digital proof of ownership of items that are bought and sold online and securely recorded on blockchain which make it difficult to later or counterfeit NFTs.

NFT has the following properties.

1. Each NFT is different from the other one which means NFT cannot be replaceable
2. NFT can be downloaded, copied, and shared because of digital asset but the original NFT and the ownership proof lives on the blockchain.

3. From the historic data stored on the blockchain, anyone can verify NFT which authenticates original owner and creator.

### **2.1.1 How does NFT Work?**

Different blockchains support NFTs but Ethereum blockchain is the platform where most of the NFTs are created and stored where anyone can review the NFTs and easily verify and trace the ownership of them. However, the person who owns the token remain bogus. Different types of digital goods can be tokenized for instance artwork, in-game items and even videos from live broadcast and the size of file doesn't matter because it remains separate from the blockchain. Also, the copyrights and license might not get with the purchase depending on the NFTs like buying the limited-edition print doesn't grant you the rights of image exclusively.

NFTs are created on Ethereum blockchain, but they are different from ERC-20 tokens, in which each token is completely different from the other ones and not divisible. NFTs assign ownership of any digital data which is trackable from the Ethereum blockchain as a digital ledger and NFTs can represent digital arts (music, videos, gifs etc.) and physical items (tickets, tokenized invoices, signatures etc.).

At a time, an NFT can have only one owner and it is managed through the unique ID and metadata that no other tokens can replicate it. Minting of NFTs can be done through smart contracts and when someone mints an NFT, they execute code which is stored in smart contracts that is in compliance with different standards such as ERC-721 and then this information is updated on the blockchain.

When someone own an NFT, it has the following meaning.

- They can easily prove that they own it just similar to prove you have ETH in your account. When they purchase NFT, the ownership of unique token is transferred to their wallet via public address. NFT is linked to a private key which serves as a unique ID or credential. The token proves the originality of the digital file, and their private key is the proof of ownership this means that private keys behind that address controls NFT.

- No one is able to manipulate it in any way.
- They can sell it and also earn the resale royalties to original creators in some cases.
- Or they can hold it as long as they want knowing the fact the asset is secured by wallet on Ethereum.

NFT opens new prospects for the blockchain. TRON, which is a blockchain based digital platform, has introduced first non-fungible token standard named TRC-721 in December 2020, which has been anticipated as the possibility for new blockchain applications and to keep pace with Ethereum growing NFT sector. The purpose of introducing the standard is to allow applications to track and transfer the NFTs through TRON platform. On this platform, each NFT has its own owner ID, metadata, safe file links and other information which is recorded in smart contract which help to identifying the NFTs.

### **2.1.2 Platforms of NFT:**

There is no shortage of online marketplaces to trade, buy, sell, or even create(mint) the NFTs. Once the creator and buyer agrees on certain price, these are the following major online marketplaces where the trading of NFTs can take place.

- **Foundation:** It is a public platform where the artist needs to be invited by the other fellow creator who already exist on this platform. There is a cost for artist in the sense that he has to purchase gas (as per section 3.2) in order to mint NFTs which means that it may boost the artwork.
- **OpenSea.io:** This is a peer-to-peer platform and the largest marketplace of NFT where there is a collection of collectibles. In order to use this platform, artist just have to open an account to find the NFTs collectibles.
- **Rarible:** This platform also works similar to OpenSea which offers variety of NFTs. It's a public platform where buyers and sellers can make trading of NFTs. It uses RARI token in order to reward the members of platform.

- **Nifty Gateway:** This platform is focused on artwork and through which people can buy and sell digital art collections. It is a platform that is used by big name brands and athletes, and it calls their collectibles as Nifties.
- **SuperRare:** SuperRare is a digital marketplace in order to make a trading of single edition artworks. The main focus of this platform is exhibiting and offering digital artwork.

### **2.1.3 Pros and Cons of NFT:**

NFTs are no doubt so much popular right now but at the same time they have positive and negative aspects also. So there the following some pros and cons of NFTs.

#### **PROS:**

- NFTs give ownership of digital assets to their creators. When someone create digital content, an NFT gives them a chance to show not only the authenticity of asset but also gives them an opportunity to earn profit from their work. For instance, now a days memes are widely circulated which could be a source of income for the creators.
- NFTs are unique and collectible, they provide uniqueness to art and a layer of legitimacy to collectable content particularly in the form of digital assets and many people enjoy the excitement they get from these characteristics.
- Since NFTs are blockchain based, so they are immutable and can never be altered, replaced, or erased. The most valuable quality of NFTs is their origin and authenticity can easily be proved.
- The most profound advantage of an NFT is, it includes smart contracts that is another fascinating feature of blockchain. An NFT with smart contract could give its creators a certain percentage of profit when the NFT is sold.

#### **CONS:**

There are also some downsides with every new technology. The disadvantage of NFTs is as follow.

- One of the negative aspects of NFTs is that it's a speculative market. It gives rise to many confusing questions like what is the value associated to NFT? Is it a long-term investment? Or they are simply a passing fad? Actually, it's very hard to tell, currently the only value is dependent on the emotive quality of NFTs.
- Owning the NFT doesn't necessarily mean you can control the asset, you simply have the authenticity of the art. And that is why the copies of your NFT might exist. Art could be copied and posted just like GIFs, memes and videos posted on various websites and social platforms.
- The technology behind the NFTs is relatively secure but many of platforms are not that much secure so there is the chance that NFTs could be stolen as there have been reports of such incidents reported by cyber security breaches.

## **2.2. Background**

### **2.2.1 Blockchain**

Non-Fungible Tokens are unique and digital assets that cannot be replaced with something else and are verified and stored using the blockchain technology.

Blockchain is a decentralized ledger of all the transactions that are duplicated and distributed across the network of computer system. Participants of this platform can confirm the transactions without the need of central certifying authority. The main purpose of blockchain platform is to allow the digital information to be recorded and distributed precisely, but not edited or manipulated. It's a system of recording information and that cannot be changed or hacked. Each block in the chain contains certain number of transactions and when someone make a transaction on this platform, a record of that transaction is added to the ledger of each participant. This is the example of Distributed Ledger Technology (DLT) where decentralized database is managed by multiple participants, and it is only

possible to add the information according to shared rules. There are two types of distributed ledger platforms.

**DL Permissioned Platform/Blockchain:** Permissioned platform, also known as permission sandbox, are closed network in which designated parties or members of consortium participate in data validation. In this platform users need to register and identify themselves from central authority to receive authorization.

**DL permissionless Platform/Blockchain:** Permissionless platform, also known as public platform, are open network which is available to everyone to participate without the need of authorization in consensus process that blockchains use to validate the transactions and data. Such type of platform is open-source development and the source of full transparency of transactions.

- **How Blockchain works?**

Blockchain technology could be referred as large, distributed data base which is protected by numbers of symmetric and asymmetric algorithms based on encrypted and decrypted information (public and private key cryptography) and hash encryption. Hash encryption could be referred as the unidirectional mathematical algorithms that are widely used for instance in digital signatures that are difficult to invert. This hash encryption is used for the management of sharable transactions between several nodes of network. Simply, blockchain is presented as the block-structured database connected to each other online and each block of chain contains information of transactions (the data of an operation, identity, action, agreement, contract) etc. On this platform, when a transaction is performed, it must be validated not only by network itself but through a sort of analysis and validation of each single block of the network and this is the reason blockchain is often referred as trust mechanism while analyzing it. The verified transactions involve cryptocurrency, contracts, and all other necessary information. A new block of data is created and added to blockchain when verified transaction combines with other transactions. Control of the whole system is ensured by nodes which are the globally distributed computers which are not controlled by any central administration. Each node in the network controls and approves all transactions by

formulating the network that share all the database i.e., all the blocks containing all transactions.

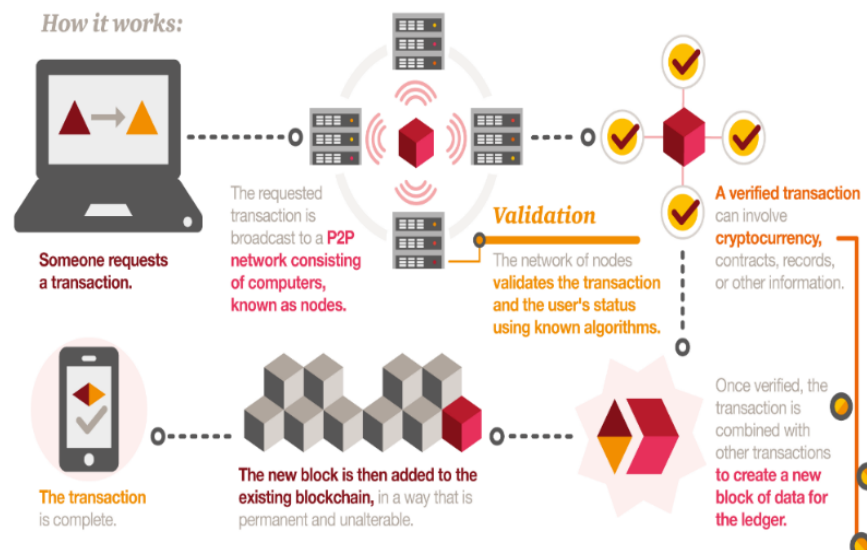


Fig 2.2.1 Working of Blockchain technology, [www.pwc.com](http://www.pwc.com)

## 2.2.2. Cryptocurrency

The most well-known use of blockchain is in cryptocurrencies. Cryptocurrency is a digital currency (or tokens) like Bitcoin and Ethereum that is secured and nearly impossible to counterfeit and can be used to buy goods and services through blockchain technology to record and secure every transaction. In the world, the total market cap of cryptocurrencies is around \$1.6 trillion USD and roughly 6700 currencies have been introduced so far.

Over the years, the trend of cryptocurrency has boosted worldwide, and everyone is noticing these currencies because blockchain technology makes it very secure currency since each currency has its own identifiable number associated with its owner. Secondly, crypto has reduced the human dependence on central banks and individualized currencies as with blockchain technology we can make transaction from any part of the world. Cryptocurrency has potential to make people rich and vice versa. The price of crypto especially Bitcoin has been driving by speculators which help early adopters to become billionaires. On the other hand, this yet has to be proved because some retractors believe the long-term benefits of crypto do not exist in the mind of speculators. But there is a boom of



crypto in the world currently and not only individuals are interested in this, but large corporations are also showing interest in the idea of blockchain technology. For example, the announcement of 1.5 billion dollars investment by Tesla in February 2021 into Bitcoin and it will also accept it as a payment method for their cars. Of course, every technology has downside also, and there are many counter arguments against blockchain based digital currencies. First, the market of crypto is not a regulated market. Furthermore, the crypto market is too much volatile, and the prices of currencies are changing over the night for instance Bitcoin. The lack of stability has made many people rich, and many have lost their money. To date (17/11/2021), the top 8 blockchains hold more than 2035 billion USD of market capitalization which is calculated as the number of tokens in circulation multiplied by the exchange rate of token in USD. The prices of cryptocurrencies surged in last couple of years even though these currencies are not backed by any bank or tied with any asset.









#	Name	Price	24h %	7d %	Market Cap
1	 Bitcoin BTC <a href="#">Buy</a>	\$60,375.56	-0.38%	-11.10%	\$1,139,596,410,211
2	 Ethereum ETH <a href="#">Buy</a>	\$4,238.52	-0.91%	-11.76%	\$501,395,889,544
3	 Binance Coin BNB <a href="#">Buy</a>	\$581.72	-0.38%	-11.14%	\$97,115,307,389
4	 Tether USDT <a href="#">Buy</a>	\$1.00	-0.13%	-0.10%	\$73,809,386,103
5	 Solana SOL	\$218.50	-1.99%	-9.04%	\$66,221,039,903
6	 Cardano ADA	\$1.88	-0.71%	-16.34%	\$62,726,435,349
7	 XRP XRP	\$1.10	-0.69%	-17.12%	\$52,007,679,352
8	 Polkadot DOT	\$42.06	-1.82%	-17.65%	\$41,413,995,221

Fig. 2.2.2. Top 8 Cryptocurrencies as per [www.coinmarketcap.com](http://www.coinmarketcap.com)

- **Ethereum Blockchain:**

The blockchain technology is not restricted to only Bitcoin but it has been associated with many different crypto currencies. The transparency and security of the technology has seen growth and can be judged by the development of Ethereum blockchain. In 2013, Ethereum platform was introduced combining with the functionality of traditional blockchain with one additional key difference which is the execution of computer code. The blockchain allows developers to create programs that can do communication with one another on the blockchain. The programmers of such blockchain can create tokens which can represent any digital asset, can track the ownership, and check its authenticity. NFTs are basically such types of blockchain based tokens that store digital art such as video, music, GIFs etc. and are operated on Ethereum based blockchain.

- **NFT V/S Cryptocurrency**

NFT and cryptocurrency are built on the same programming and rely on the same technology i.e., blockchain. Also, people require crypto currencies to purchase the NFTs on its marketplaces. But there is a difference between them and are used for different purposes. The key difference between NFTs and crypto currencies is the fungibility (NFTs are non-fungible and crypto currencies are fungible) meaning that crypto can be exchanged or traded for another since they are equal in value. On the other hand, NFTs are different because each NFT is a digital asset and has digital signature which shows the ownership and that is what makes them impossible to exchange or traded to another. The other main difference is cryptocurrencies act as currencies which store value or allow people to buy or sell goods through them. They are fungible similar to paper currency like dollar but NFTs are collectible assets that create tokens which shows the ownership and rights over digital goods.

## 2.3. History of Sales of NFT

On 3<sup>rd</sup> May 2014, Kevin McCay was the first person who created the first ever NFT. He minted “Quantum”, as his first NFT even there was no hype of crypto market. From the creation of first NFT in 2014 there was lack of awareness among people till the mid of 2017. But, in December 2017, the success of CryptoKitties became the source of public awareness and boom in non-fungible tokens. People started taking interest into this new emerging technology, but the overall output was still below average. However, the rapid growth of NFT started during COVID time i.e., during 2020 with a value of \$250 million in that year. In 2021, the buying surge of NFT took place and in the third quarter of the 2021 so far, the sales are increased to \$10.7 billion across multiple platforms of NFT. The trend of NFT sales over the last 1 year can be seen from the following figure.



Fig. 2.3.a. Sales of NFT of last one year as per [www.nonfungible.com](http://www.nonfungible.com)

According to the most authentic source regarding non fungible tokens ([www.reuters.com](http://www.reuters.com)), sales trend of NFT in the third quarter of 2021 is only for the highly usable platform i.e., Ethereum blockchain. More than half of NFTs were sold during the 3<sup>rd</sup> quarter of 2021 within the price range of \$101- \$1000 which constitute the major percentage of sold NFTs among all. Whereas only 0.01% of NFTs was sold in the price range of \$500,001- \$1,000,000. The US based project

named Art Blocks was the only highly sold NFT on Ethereum blockchain which was around \$ 6.9 million at that time. The detail analysis of NFTs sales can be seen in the following picture.

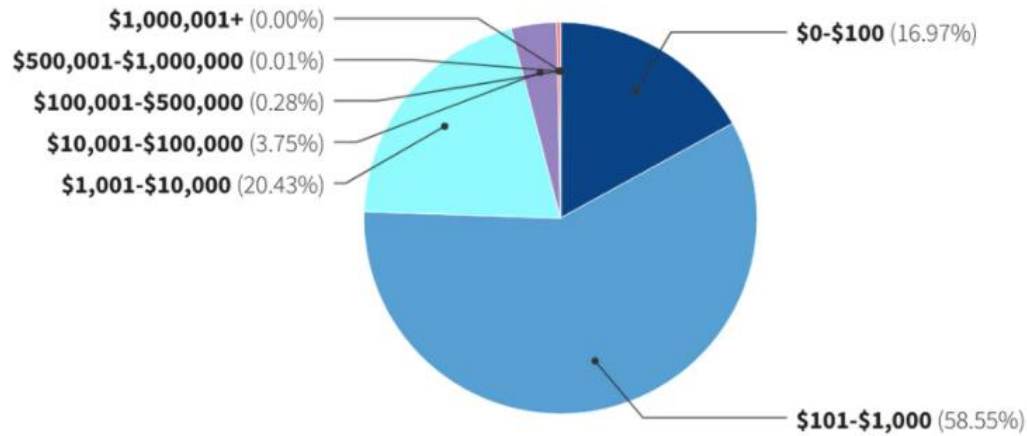


Fig. 2.3.b. Sales of NFT in Q3 of 2021 as per [www.reuters.com](http://www.reuters.com)

## 2.4. NFT used in decentralized finance

There are two most noticeable trends exist in the crypto market, one is Decentralized finance (DeFi) and the other is non-fungible token (NFT). Decentralized finance is basically a financial system based on blockchain technology. Many blockchain network such as Ethereum blockchain contribute to the development of such decentralized finance ecosystem. Through different in-built tools such as cryptocurrencies, smart contracts on blockchain, DeFi opens the door of decentralized finance management. On blockchain technology, NFT focuses on tokenization of assets while DeFi enables access to decentralized access to financial services. NFT is not only considered as the digital art or collectible, but it serves exceptional contribution toward the development of decentralized finance ecosystem in the longer run. In other words, NFTs are considered as an instrument for DeFi.

Since NFTs have capability to represent the commercialization of digital product and services, the combination of NFT and DeFi becomes feasible. After the introduction of Ethereum token i.e., ERC-20 token for the representation of digital asset, NFTs are now promising application in the decentralized finance sector.

Furthermore, the most important characteristic linked with NFT and DeFi together is the *verifiability*. The most important thing to notice is that NFT has ability for allocating value to anything whereas DeFi helps to unlock the value for specific asset. The combination of both NFT and DeFi is boosting number of users in this domain, and they can transform the way of viewing assets, token, and financial services.

## Chapter-3

### 3. Functionality & Value creation by NFT

#### 3.1. Introduction

This chapter is focused on the main application of NFT and why it should be considered. In recent years NFT has got a huge attention probably due to the massive rise in the price of cryptocurrencies. Therefore, the NFT has become the new favorite thing to study, explore and trade. The word “non-fungible” tokens endorse at least one characteristic i.e unique attribute, location or identity is associated to it and this is how it is differentiated from the cryptocurrencies. The demand of NFT is raised due to its wide range of application in multiple aspects from art, music, and memes to the gaming sector. However, there are multiple uses and perspectives of this technology. There is a particular segment of people, who prefer to use these tokens and invest into it. This chapter will also be used to explore and exploit the motivation of the people behind buying and selling of this new technology-based trading. NFT has also changed the conventional method of doing business. It has been a source of interaction between the people and brands. Therefore, this chapter will majorly answer these following questions:

- How NFT is created?
- What is the value of an NFT and how it's perceived by the people?
- What are the different applications of NFT and how it has revolutionized the traditional business?
- Lastly, what is the motivation behind buying and selling of NFTs?

People see NFT as the future of ownership. All type of property from currency to event ticketing, will have the status of their ownership tokenized through the non-fungible tokens. NFT bridges the gap between an artist and the end-user and ultimately helps the artist to make more money and for each transaction the NFT changes ownership. Fans became able to enjoy the perks of participating in the

concerts, videocalls and other communication benefits offered by the influencers. Some of the real-time examples are included to study the main objectives behind this trading and how people can decide to either invest into it or not.

### **3.2. NFT Minting & Selling**

NFT has gained a lot of attention in the past decade and specially after the passage of pandemic situation. Specially the art world is a bit conservative, but lockdowns have enhanced a huge growth to wake it up and to compete with the digital world. This question is being raised by different artists these days due to its attractive pricing for which the NFT has been sold recently. There are numerous examples of NFTs being sold for millions of dollars. Therefore, it's totally worth exploring if the NFT can be a source of earning money and making wealth in the near future. This is kind of a unique platform where it's almost impossible to replicate the success of any other NFT which is the premiere goal behind the creation of NFT - uniqueness and ownership of the single non-fungible token. The companies that enable these kinds of transactions and the platforms which helps in generation of NFT, charge an amount of fees to the NFT artists, before and after the sale. Non-fungible tokens creation method is referred as Minting which is explained below:

#### **Step-1 Platform Selection**

First and foremost, it's important to select the platform which you want to use for the NFT generation. There are multiple available options where NFT can be made and sold which includes the popular platforms i-e OpenSea, SuperRare, Nifty Gateway, NFT Showroom, BakerySwap etc. Whereas for the payment, platforms used are MetaMask, Coinbase, WallectConnect etc.

#### **Step-2 Payment method Selection**

The next step is to create a digital wallet where all the transactions take place. Once the digital wallet is chosen, the digital currency (Cryptocurrency) will be added to that specific wallet. After that, the digital wallet will be linked to the NFT platform already chosen. It's important to note that an individual need to pay a fee

upfront for the NFT generation (Minting) of his/her work which is known as Gas fee.

- **Gas fee for NFT minting:**

Gas fees are payments that users have to be made corresponding to the energy consumption required by a transaction on the blockchain technology. It is similar to the service fee charged by credit/debit cards for proceeding any transaction online. Gwei is the unit of gas fees used by the Ethereum blockchain platform.

**For illustration:** To explain the gas fee phenomena, a car can be taken as an example which is in the transaction. For operating a car, the driver needs fuel similarly for the Ethereum transaction, gas is required. If I want to reach a friend, I need to take car and put fuel in it which is necessary to reach the destination. If the traffic is low, it will take lower amount of fuel to reach the targeted destination however if I try to reach the same destination in peak hours, car will consume more fuel due to heavy traffic, but the distance remains the same in both conditions. Similarly, every transaction on the Ethereum network needs some gas fee to perform operations and it's influenced by the congestion of the network at that time. Gas on the Ethereum has been assigned a market price which is influenced by the availability of resources in defined period of time. It's easier to understand in this scenario, the higher the traffic on platform, higher gas fee will be charged for the transaction and vice versa.

Along with the seller, it's a problem for buyers as well. Buyers also need to pay this gas fee while making an order and to cancel one. Gas fee is also charged while transferring the NFT from one person to another which is also influenced by the traffic of the platform at that time. Therefore, stakeholders face different problems especially when they are not aware about the gas fees. Some amount of the gas fees is also charged if the transaction isn't successful. For example, if the transaction is initiated for the 100 ETH and there are not sufficient fees available in the account then the buyer will be charged 100 ETH plus the gas fee for the energy consumption used for the failed transaction.



Most of the platforms require the payment to be made through Ethereum which is the native cryptocurrency of open source blockchain platform ETH, where the NFTs were firstly introduced and launched. Hence, the initial step to buy some cryptocurrency to mint the NFT at any open-source platform.

### **Step 3- NFT Minting (Generation)**

Here comes the main stage of minting NFT and the platform will provide the options to either choose single, one-off or sell the same item multiple times. The digital file needs to be uploaded here which will be converted into a non-fungible token. It accepts multiple formats like PNG, GIF, WEBP, MP4, MP3 files.

Once the above three major steps are completed, artists can proceed towards auctioning of the minted NFT. Multiple auction methods include fixed price, timed auction or unlimited. In this part, the selling process is being decided. Fixed prices allow artist to set one price and seller can buy it instantly. Timed auction is limited to a specific period of time, and it'll be automatically closed, and the unlimited auction will keep on going till the owner accepts any.

### **3.3. Revolutionization with the emergence of NFT**

With the emergence of NFT, there has been a massive change in the business and the way trading was done before. It's reshaping the conventional trading and current lifestyle to a greater extent. Few of the examples are illustrated as follows: NFT is changing the way of digital artwork buying and selling. It reduces the chances of involving an agent. An artist can directly create the art on the public blockchain platform and reach out to the layman and ultimately sell it out on the same platform. Artists are generating a lot of revenue through the advertisement on web hosting. Some of the NFTs have been sold closing the bid up to \$ 400,000.

*“There's always a turning point in history which marks a complete change in the paradigm and the way we see and do things.... the first one to go and initiate change is where the money will follow - that's part of what we're buying into when we invest in an NFT,”* said Amrita Sethi, NFT Artist.

Future of NFT seems to revolutionize the way of travelling for a casual traveler who doesn't need to carry hard copy documents to prove his/her identity. NFT can help in creating a digital identity document which can be used for to travel within the country or even internationally. It can save the confidential data to be verified by the authorities, health professionals or employers etc. NFT is also changing the buying and selling of tickets. Due to the reliable transactional process, it is also used to issue tickets rather than printing the hard copy tickets which ultimately reduces the cost at a larger extent. It also helps in reducing the risk of reselling due to the tokens being non-fungible which can't be replaced. A similar platform NFT.Kred is providing the service that can create the digital tokens/tickets for the events.

### **3.4. Value of NFT**

After understanding the concept of an NFT, the immediate thought comes to the mind is what's its value and who decides it? The value of NFT is different from the practical things we trade in day-to-day life. It's very crucial to understand the exact value of an NFT before trading and how does it evolve with the course of time. It's not limited to the physical things which have real world value associated to them. That's why value of an NFT is dependent upon the type of NFT it is on the blockchain platform. If the asset is related to a physical thing, then the value is dependent upon the associated NFT on the blockchain platform. But if the targeted asset is digital, then its value depends on the buyer's perspective and how does he/she value it, it's purely speculative. Its value is reflected by the market supply and demand phenomena.

An art can be taken as an example for this concept. The price of an art is speculative and is affected by the two main factors i-e public sentiment and willingness of buyer to pay. This allows seller to set the price of that art to any extent he/she wants but whether the buyer will be willing to spend such amount or not, it's a different thing. These both perspectives give rise to the speculative pricing of an NFT. Several examples include the pricing of famous tweet, snaps, stories, memes, and artwork etc. An astonishing example of NFT includes the sale

of the very first tweet of CEO twitter, which stated “just setting up my twttr”, was initially published on 21<sup>st</sup> March 2006. There was no parameter to setup a price for this kind of digital asset. It was listed for sale on March 6, 2021, and CEO of Bridge Oracle, Sina Estavi won the auction by spending 1630.58 Ethereum valued around \$2.5 million at the time of sale.

Above example shows the sky's the limit for the pricing of NFTs that don't have any parameter/criteria to define a specific price tag but since the value of that NFT is defined by how much buyers are willing to spend for such type of digital asset, it can completely cross the wildest expectations of traditional sellers as well as buyers. Besides the originality of the content there are some other factors which can massively impact the value of an NFT which includes the signature of content creator, the place of asset formation, autographs etc. Therefore, the value of an NFT is not pre-defined and is not even associated to the physical assets. It solely depends up on the type of NFT being auctioned and how much buyers are willing to pay for that art or asset. NFT prices are highly influenced by the market demand and supply apart from its uniqueness

### **3.5. Types of NFT**

After the abrupt boom in the NFTs, we have observed multiple types of NFTs being sold and bought on different platforms. Therefore, it's quite necessary to categorize the forms and types of NFTs. NFTS can be classified into three main categories:

**Original or copy of work**, these are created on the blockchain platform.

**Digitally Native NFTs**, the assets that are able to issue NFTs to different people along with the ownership rights.

**NFT Metadata**, it involves the link to the metadata of NFT but doesn't provide the ownership but only the rights to use it.

Current evolution of NFT and innovation can be a source of its minting into different application domains. NFTs can be of different types which is depending upon the

nature of NFT, and its use. The common list of NFTs being traded recently includes:

**a. Collectibles**

The first application of NFTs was observed to be the online collectibles. CryptoKitties is a valid example for such type of application. This is based on a game which allows users to collect, breed and sell virtual cats.

**b. Artwork**

Another famous interaction of technology and art refers to the digital artwork being traded on the digital platform i.e blockchain. Different tools available on the blockchain platform assists artists to make different illustrations. NFT enables buyers to register for the ownership of real-world art on the blockchain platform.

**c. Memes**

Social media enthusiasts also participate in this new ecosystem with the buying and selling of memes as NFT. It provides the meme creators a chance to trade their NFTs on the blockchain. It's seemed to be revolutionized among other application of NFTs to sell/buy memes which was never imagined before.

**d. Event Tickets**

As previously mentioned in the revolutionization aspect of NFT in section 3.3. Through this technology, event managers can easily mint NFTs and sell tickets via blockchain. This kind of ticketing method can be used for concert tickets, music events, football matches and other applications in which participants can show their tickets digitally and prove their identity as well.

**e. Music**

Blockchain has also been used to link music to the NFT. There have been different experiments to create this category in the NFT application area. It provides the access to fans or candidates for using the media files or music. Two of the main platforms which are used for this kind of application is Mintbase & Rarible. Through

this way, artists/singers are able to reach out to their fans and followers directly providing them a premium experience and other services. Some of the artists allow their fans to purchase their NFTs and in return they get their close experience like access to online meeting, information about next release, autographs etc. Earlier this year, Kings of Leon became the first band to issue NFTs.

#### **f. Gaming**

Common application of NFTs has been observed in the gaming sector. This has enhanced the interest of game enthusiasts at a different level. Gamers would be able to sell and purchase easily in-game items. Game developers make great revenues by minting NFTs which makes revenue for every sale of in-game items in an open market.

#### **g. Identity**

Due to an important characteristic of NFT i.e scarcity, it's widely experimented to be used for identity purpose. Its non-fungible means it's unique and can't be replaced to anything else. Therefore, it works like a passport and can be used by the owner for its identification without the fear of losing the data.

- **Ariane:**

Ariane, a blockchain alliance of some luxury brands, issues the digital passport for the luxury goods. These digital passports are the digital tokens i.e., non-fungible tokens which are linked to distinctive luxury items and it's linked to the physical objects. These digital passports are actually the proof of authenticity and ownership of the associated physical items that also enhance the resale of those items. Besides, this new idea also increases the connection of customers with the brand.

The alliance brand Breitling is currently issuing digital passport for its watches and these passports can be accessed by either downloading the encrypted digital wallet or scanning the electronic card of the owner which acts as the digital identity of watches and also the proof of ownership and authenticity. Through this digital

passport, in case of resale, the ownership can be easily transferred without any paper documentation formality.

Among the above-mentioned categories of NFTs (sports, game, utility, art and collectibles etc.) that have been most sold out on Ethereum blockchain, below illustration is only for one month of third quarter of 2021. Among them, the most famous ones were collectibles and art while the least sold one was sports' NFT. The most expensive NFT ever sold was a digital collage (digital art) at Christie's for \$69.3 million. The trend of volume of sales of different categories of NFT is shown in the following figure.



Note: Data only shows sales on the ethereum blockchain, which is used for the majority of NFT sales. Data does not include sales which took place "off-chain". Data refers to the 30-day period up to Oct 4.

Fig.3.5. Sales of different categories of NFT as per [www.reuters.com](http://www.reuters.com)

### 3.6. Buyers & their motivation

Mike Winkelman, also known as Beeple, became the third wealthiest living artist after his NFT was sold for around \$69 million at an auction in March 2021. NFT has been blooming as one of the hottest commodities across the world, generating more than \$10.7 billion sales recently till first week of November 2021 as per the report from market tracker Nonfungible.com.

According to Eloisa Marchesoni, NFT buyers are not just the traditional investors who expect a rate of return over fixed period of time.

NFTs maybe worth purchasing if someone enjoys collecting, supporting specific communities or intends to invest into something. NFT provides a unique value due to the reliable transactions performed on the blockchain. When someone buys an

NFT from the artist, the ownership is transferred so it becomes their property. In most of the cases the buyer is not buying the content but rather a token which links his/her name with the artist's art on the blockchain platform. Therefore, NFT is an ownership certificate of a digital asset which can be traced on the blockchain platform. Along with this, there are other benefits which can be considered while purchasing the NFTs which are explained as follows,

- **Brand Perks**

Getting an NFT from your favorite company might come with some extremely great benefits. Discounts, airdrops, merch drops, limited edition goods, exclusive invitations, and even more digital assets for your portfolio are all possibilities.

Investing in a brand in order to qualify for this sort of utility might be a smart move. If the customer is loyal to the brand, then it would encourage him/her to buy more frequently and take advantage of the token's bonuses, discounts, and collectability. Purchasing an NFT from a brand is equivalent to purchasing a minor stake in that firm. You've put money into their product, which you may resell for a profit on a variety of platforms.

- **Collectivity**

When it comes to non-fungible tokens, collectability is one of the crucial aspects. In the past we used to collect soap bars, footwear, Pokemon (video games), and even sweat bands. We never purchased such products with the aim of reselling them instead, we purchased them because we loved what they were.

Currently, the greatest way of collecting is on the blockchain. Every NFT's history data is revealed on the blockchain. As a result, NFTs can be a source of completely transparent trading and dealing. Not only are the transactions decentralized, but they are also completed almost immediately, with both the seller and the buyer signing a document verifying the transaction before proceeding with the sale.

- **Investment Opportunity**

Investing in digital assets like NFTs might be a lot of fun, but it's also a lot of risk. However, high risk brings high return. Every day, thousands of people benefit by developing and trading NFTs, and many people make a full-time living from purchasing and selling digital assets.

You may make a big return by investing money in NFTS in a variety of ways. One of the most typical strategies to make money with NFTs is to buy assets for a low price and then sell them for a higher price. Looking into long-term investment options is another approach to invest. Long-term investment prospects abound, owing to the fact that many new businesses and brands are being developed on the basis of NFTs. Proper research needs to be done before finalizing any decision and to priorly assess if it's worth investing in the NFT for a specific company .



## Chapter-4

### 4. Case Studies

#### 4.1. General Overview:

Some of the real-life examples have been taken to develop deep insights about non-fungible tokens and why there is so much hype created for it. There are numerous brands participating to this club every single day, some have been chosen due to multiple criteria: famous stories of NFTs, involvement of renown fashion luxury brands and other unique cases. The applications are not limited to a specific number, but this study considers few which have been illustrated into this table below:

Sr.#	Case Study	Date of Launch	Platform	Description
1	EveryDay: the first 5000 days	Feb-21	Christie's Auction House	This is digital art which comprises of the collage of 5000 images of everyday series of the artist. He kept producing new images daily for 5000 days and made a collage which sold as NFT
2	CryptoKitties	Nov-21	Ethereum Platform	CryptoKitties is a video game in which the players can buy, sell and breed different kind of unique digital kitties. Each Kitty is a unique NFT having different appearance and different cooldown time.
3	CryptoPunks	Jun-17	Ethereum Platform	CryptoPunks are pixelated images released 10000 in numbers and most of them look like male and female and few are like zombies and odd alien.
4	Jack Dorsey's first tweet	21-Mar	Valuables	Jack, CEO and co-founder of Twitter and Square Inc, made his first tweet in 2006 about setting up his twitter. This tweet gained popularity with 161k likes and purchased as NFT by CEO of Bridge Oracle.
5	Weird Whales	Sep-21	OpenSea	A 12-year kid gets overnight success by selling NFTs of 3350 weird whales, a collection of his artwork
6	Banksy Burnt Art	Dec-20	OpenSea	A unique example of art, by burning an existing physical art, team makes up four times the original value by selling burning video as NFT- a "Money making" stunt.

7	Disaster Girl Meme	Apr-21	Foundation	Disaster girl meme got a lot of attention on social media and was sold as an NFT in an auction. That photo was taken by her father in 2006 during a fire drill happening around in their neighborhood.
8	Republique	Aug-20	Ethereum Platform	A digital startup to enhance the virtual fashion without involving the physical garments. For the social media enthusiasts, it was suggested to buy virtually and customize their digital outfit in the form of NFTs.
9	Louis Vuitton	Aug-21	Android & Apple stores	Louis Vuitton launched a video game named Louis: The game to celebrate 200th birthday of the founder of the brand. In the video, the players collect 200 candle in which there are 30 NFTs as collectible and each candle is a postcard that reveals history of brand and journey of its founder.
10	Clothia	May-21	Rally.io	Clothia, an NFT platform to provide an eco-friendly system for both designers and customers. Designers can approach audience from all over the world and customers will remain updated to the current fashion.
11	Takashi Murakami x RTFKT Studios	Oct-20	Decentraland	Intersection of sneakers and gaming industry, a collab which enabled game enthusiasts to enjoy different variety of sneakers in their games and can be bought as NFTs to prove their ownership.
12	Burberry	Jun-21	Blankos	Burberry introduced some characters in the Blankos block party and other in-game items under its flagship title which can be bought as NFTs.
13	Rebecca	Sep-21	OpenSea	Rebecca in partnership with Yahoo, introduced 3D gallery of fashion collection where customers can buy virtually the digital garments.
14	Balenciaga x Fortnite	Sep-21	LendEDU	An outstanding collaboration of fashion with gaming sector, where Fortnite game players will be able to customize their outfit with Balenciaga collection in the virtual store.
15	Karl Lagerfeld	Oct-21		For paying a tribute to the deceased owner, the team created owner's avatars as collectibles to be owned and shared on social media.
16	Overpriced Hoodie	Apr-21	BlockParty	Overpriced, a new startup, launched a physical hoodie which was linked to a scannable V code.
17	Dolce & Gabbana	Aug-21	UNXD platform	D&G launched its first NFT based collection called Collezione Genesi which consists of 9 NFT one-of-a-kind pieces designed with the partnership of UNXD.

18	Jimmy Choo	Oct-21	Binance Platform	Jimmy Choo launched the virtual sneaker along with the 8888 mystery boxes. The buyer of virtual sneaker receives the hand painted limited edition of sneaker with a mystery box. .
19	Gucci	Jun-21	Christie's Auction House	Gucci launched its first ever NFT which is an animated video inspired by its own collection Gucci Aria launched on the eve of 100-year anniversary of the brand.
20	Krigler	Jun-21		Krigler launched a leasing program of its famous perfume and associated it with NFT. This NFT is a digital video of the leased perfume, and the buyer of this fragrance will get the ownership of NFT and perfume for 12 months.
21	Jacob & Co.	Apr-21	ArtGails	The NFT launched by the brand is a unique piece of watch named NFT SF24, inspired by brand's own watch Epic SF 24. The NFT based watch is mounted with split-flap display which shows top 10 cryptocurrencies in 10 second short, animated video on the watch.
22	Bulgari	-	-	Bulgari will launch its first NFT artwork based on artificial intelligence. The brand already launched the digital artwork incorporated the brand's iconic snake design into metaverse. Besides, the 3D sculpture contain 70 million pictures of plants and nature along with the diffusion of brand's famous perfume.
23	Hermes: Baby Birkin	May-21	Basic. Space	Baby Birkin is a virtual animated bag of brand Hermes which features 3D animation of 40-week pregnant fetus accompanied by space like backdrop and theme music. The baby moves around the bag as it grows, and the bag does not exist in the physical world.

Table 4.1 Description of case studies

First seven case studies are referred to general stories and jaw-dropping wonders NFTs did in the past few months. Furthermore, the remaining sixteen cases are from the fashion luxury industry welcoming the NFT technology to extend their domains. Some of the brands intended to collab with other famous brands and some preferred to bring NFT to their core business and get the brand notified. Each of the case study will be thoroughly explained in the next sections.

## 4.2. Categorization of case studies:

Above list of examples have been selected to develop deep insights about the NFT and its applications. The main idea is to find the rationale behind this new crypto world and blockchain technology. People are very excited as well as perplexed to see this digital revolution. Numerous examples represent the sales of NFTs for unexpected prices. In the history, there is no record of digital platforms getting this much attention abruptly and getting investments at the doorsteps. Sample selection of the case studies represents a general behavior of companies especially luxury fashion towards the crypto club. Hence, choosing few case studies was not less than a challenge but the criterion behind the selection is to answer few questions:

- What are the different approaches used by luxury fashion industries used to penetrate the blockchain technology?
- How can we categorize non-fungible tokens based on their nature and usage?
- What are the mostly used platforms to address the ease of NFT selling and buying?
- How does the NFT application impact company's performance and audience interaction?

Therefore, the above case studies have been segregated into following six major categories which are described as below:

- **Artwork**- One of the prominent category of NFTs, being used for buying and selling of art. This tool enables artists to showcase their art easily addressing larger audience. Video art including short video clips and GIFs have been sold with notable records.
- **Collectible Items** – Another category famous for expensive NFTs being sold within seconds.
- **Virtual Fashion** – Fashion luxury has introduced the virtual selling of garments as NFTs, which buyers can purchase and simultaneously customize in the virtual world.

- **Miscellaneous Items-** NFT domain is not limited to a specific category hence there are few examples of extra-ordinary NFTs being sold for millions of dollars. This category of NFTs include trading of Snapchat stories, tiktoks, famous tweets and social media posts etc.
- **Memes-** One of the interesting category was observed to be the selling and buying of social media memes. It encourages social media enthusiasts to trade the unique memes they own.
- **Video game items** – Fashion luxury has widely penetrated in the gaming sector, allowing game users to customize their skins, characters into the game introduced by big giant fashion industries.

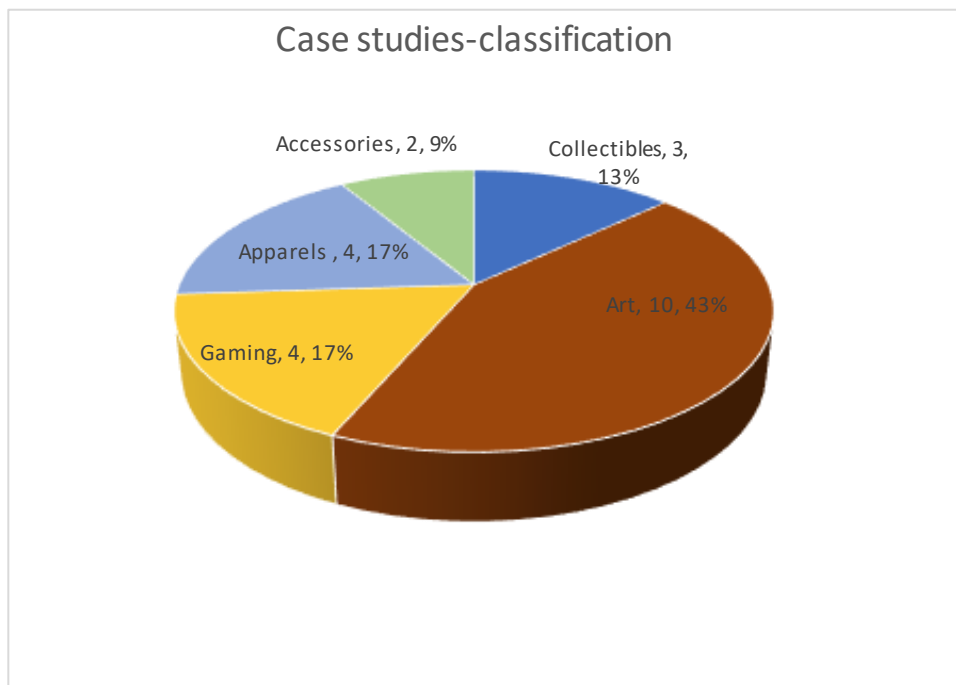
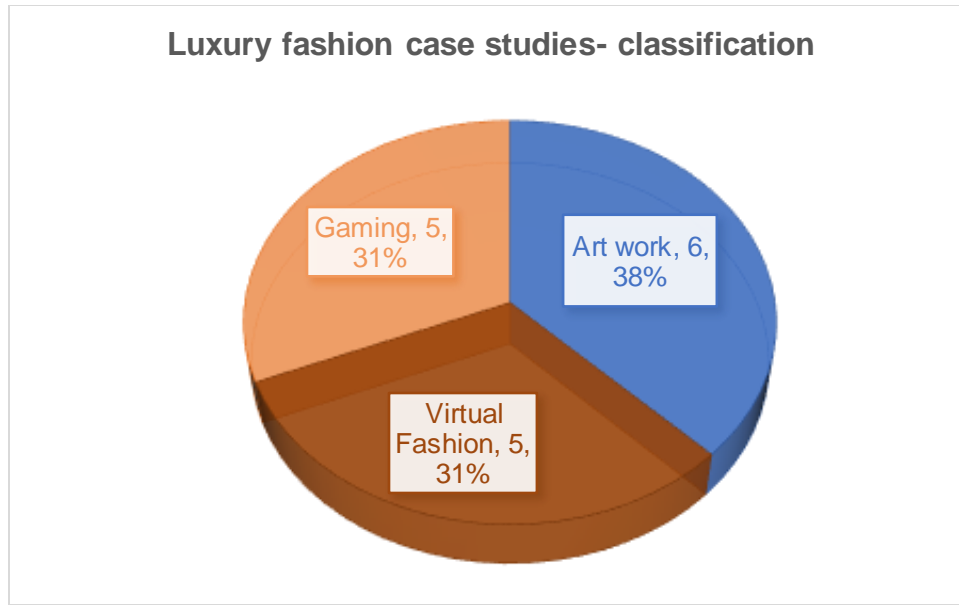


Fig. 4.2.a. Categorization of Case Studies

Above analysis highlights the multiple dimensions of NFTs use. As per the most prominent category, majority of case studies fall under the umbrella of artwork. Furthermore, luxury fashion industry applications are also worth-noticing, and the categorization has been illustrated as below:



*Fig. 4.2.b. Categorization of luxury fashion case studies*

This further analysis highlights the most used category of fashion NFTs are in the Artwork, virtual fashion, and gaming industries. Case studies of which will be explained in the coming section.

### **4.3. General Case Studies**

#### **4.3.1. Everyday: the first 5000 days**

Pixelated digital art created by an American based graphic designer named Mike Winkelmann famous under the title of Beeple. His work is a collage which contain 5000 digital images for his everyday series. He was inspired by British artist Tom Judd and started his daily work from May 1, 2007, from drawing the image of his uncle Joe and posted it online. The next day he made another new image and shared it online too and did the same thing for the next days and in fact kept doing this and created new images for the next 13 years (5000 days). “EveryDays: The First 5000 Days” is the collection of everyday images produced by Mike over the 13 years of time span. The photographs were ordered chronologically and included pop culture luminaries such as Jeff Bezos and Donald Trump.

When design business suffered a setback by COVID, he began to immerse with the perplexing world of cryptocurrencies, blockchains, and non-fungible tokens (NFTs), which are essentially digital certificates of ownership. He learned that there were some serious players in the virtual game, players who would spend serious money for a piece of digital art that came with a unique idea of NFT. For selling his piece of art, he teamed up with the Christie's which is an auction house located in United Kingdom. Christie's had never sold a totally digital work before, one that didn't exist in the actual world but belonged in the virtual one. They held a two-week long online auction for the work, with the bidding starting at \$100. NFT associated this piece of digital art was sold for \$69.3 million at Christie's in 2021 which is the most expensive NFT sold till today and among the most expensive work by any artist. "Singapore-based programmer Vignesh Sundaresan, who purchased the Everydays: the first 5000 days", a crypto investor and the founder of Metapurse NFT project which is also known as pseudonym MetaKovan. In Christie's online sale, Metakovan, identified himself as the buyer of the first non-fungible token (NFT) to be sold at auction, placing the winning bid of \$69.3 million (plus fees) or around 42,329.45 Ether.

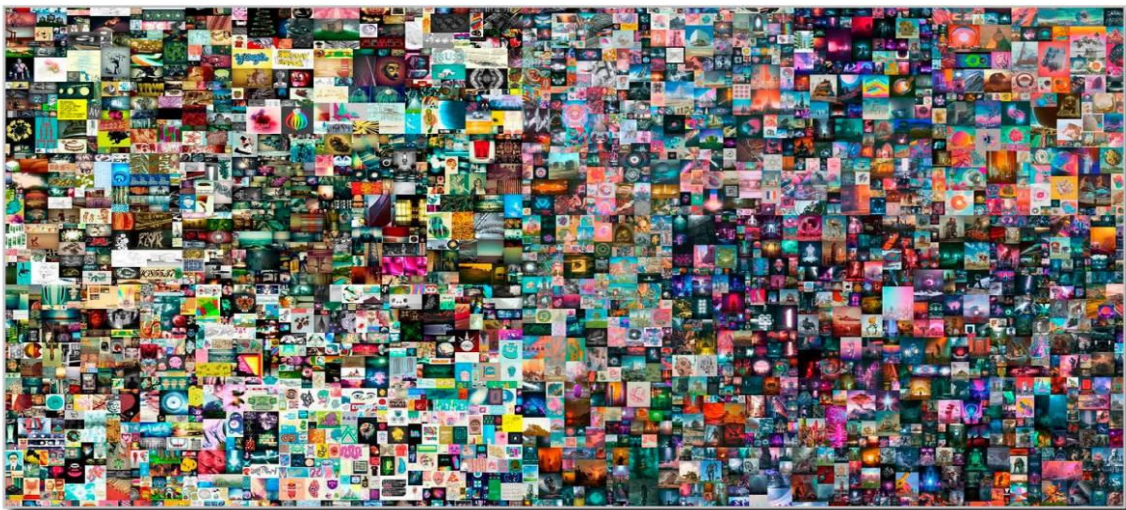


Fig. 4.3.1. EveryDays: the first 5000 days as per <https://www.bbc.com/news/entertainment-arts-56368868>

The key distinction of this digital art is that Beeple creates his images utilizing a different technique, medium, and materials: he is a 21st-century artist whose time

has come in part as a result of our more digital existence as a result of the epidemic. The speed with which he works, as well as the issues he addresses, are not unusual in the history of art therefore, it's fair to make comparisons to other artists.

### **4.3.2. CryptoKitties**

CryptoKitties is a video game developed on Ethereum blockchain as an example of non-fungible token (NFT). It was developed by a Canadian studio called Axiom Zen in November 2017, as a first ever attempt to use the blockchain technology for recreation and gamification. This company also released some art under the umbrella of Nifty license and allows their players to use CrptoKitties in some cases. In this video game, the users can buy, sell, and breed collectible digital cats and each one of them is a unique NFT based on the coding of Ethereum standard, ERC 721 token, and the owner of each Cryptokitties can be verified through the smart contract on blockchain. Each cat in the video game has been assigned a distinctive visual appearances and to play this game, the users need to have a computer, cryptocurrency wallet and Ethereum coins to pay the fees (i.e., 0.008 ETH in addition to transaction fee) for buying, selling, and trading of CryptoKitties. During the time of its peak i.e., in 2017, Cryptokitties laid the foundation of using the Ethereum technology in gaming industry and engaged more than 14000 users daily which helped the Ethereum blockchain to grow. According to the Axiom Zen, each kitten has 256-bit genome that has potential to create 4 billion varieties of genetic appearance of different kittens. The only difference and promising characteristic among them is the “cooldown” time, the time that kitty takes from recovering after breeding (meaning that when a kitty breeds with other kitty, for a small period of time it will not be possible to breed again).





Fig. 4.3.2.a. CryptoKitties as per <https://www.cryptokitties.co/blog/post/will-you-be-the-first-to-breed-these-imaginary-cryptokitties/>

The purpose behind the generation of CryptoKitties was to make people experience the blockchain technology in a different way and without explaining them what actually the blockchain is. CEO of CryptoKitties said that “*CryptoKitties’ good design and appealing aesthetics are responsible for introducing entirely new audiences to the potential of blockchain technology.*”- Roham Gharegozlou.

According to different estimates, since the launch of Cryptokitties, it has gained so much popularity and so far, attracted more than 1.5 million users who are responsible for about \$40 million of transaction on Ethereum platform which accounts for 30% of total trading on this platform. The most expensive kitty sold out in the game is worth of now \$290,000 USD (100,000 ETH at the time of transaction). The cumulative sales of Cryptokitties at the end of 2017, can be seen in the following figure.

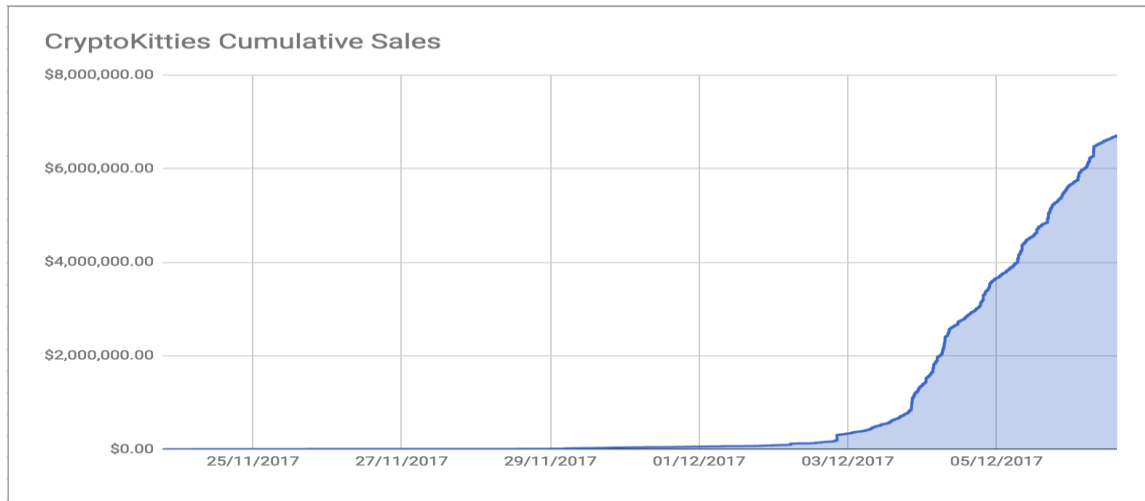


Fig. 4.3.2.b. Cumulative sales of CryptoKitties at the end of year 2017 as per [www.cnbc.com](http://www.cnbc.com)

### 4.3.3. CryptoPunks:

CryptoPunks are 24x24 pixelated art images generated by computer algorithms. They were released in 2017 as an NFT based on the Ethereum blockchain and they were in total 10,000 characters out of which 9000 characters were released for the public while 1000 were kept by owners. Each character is different from the other one and mostly are punk-looking guys and girls (6039 males and 3840 females). Some of them are mixed and looked like zombies and odd alien. The project was developed by two Canadian software developers Matt Hall and John Watkinson in studio Larva Labs. Initially, they were released for free, and anyone could get it with Ethereum wallet, the only cost that buyer had to pay was “gas fee”. At that time, there was negligible response due to lack of knowledge of the project among tech-enthusiasts. But now, with the craze of NFT, all the punks can be purchased via digital marketplace that are associated with the blockchain technology. There are three versions initially introduced for the CryptoPunks. First one is with blue background which means that punks are not for sale and currently they have no bids. Second is with red background, and that punks have status of for sale by their owners and lastly, punks with purple background means they have active bid on them.



Fig. 4.3.3. CryptoPunks as per <https://www.true-news.it/future/cryptopunks-nft-avatar-bored-yacht-metaverse>

Soon after the buzz of NFT around the world, the transaction volume of CryptoPunks skyrocketed especially in early 2021. One of the main reason that drives the demand of CryptoPunks is, this project was one of the oldest NFT projects and it was the first project to set randomly profile images even of some high-profile influence and investors like rapper Jay-Z. Regarding the popularity of CryptoPunks among crypto investor, currently three CryptoPunks make into the list of top 10 expensive NFTs. To this moment, the overall sales of CryptoPunks touches to 1.67 billion USD. The most expensive CryptoPunks that has been ever sold out is CryptoPunk# 9998 worth of \$530 million followed by CryptoPunk# 3100 and CryptoPunk #7804 that were sold out for \$7.67 million and \$7.6 million respectively.

#### **4.3.4. Jack Dorsey's first tweet:**

Jack Dorsey is the co-founder and CEO of Twitter and Square Inc. an internet entrepreneur as well as philanthropist. Twitter has been used widely for the commercial purpose and Square is used for the financial transactions. Jack has already been supporter of the crypto world and earlier this year in February 2021, his company Square Inc. converted \$170 million into the bitcoin. He has always supported and advocated the use of crypto especially bitcoin.

Jack made his first tweet “just setting up my twttr” in March 2006. That tweet was shared for more than 120k times and had 161k likes. Dorsey was able to sell his first tweet for about \$2.6million and posted that he’ll convert that amount to Bitcoin and ultimately donate it to GiveDirectly’s Africa response to the COVID-19 relief.



Fig. 4.3.4. Jack Dorsey's first tweet sold as NFT <https://www.liveauctioneers.com>

That NFT was purchased by the chief executive of Bridge Oracle, Sina Estavi. This Malaysian based CEO compared this tweet to buying a painting of Mona Lisa which he stated in a tweet later on. He also endorsed that people will exactly now the value of NFT in coming future, it's not like just buying a tweet but rather an ownership to a remarkable digital asset. He also mentioned the moto behind auctioning for Jack's tweet and another NFT by the Elon Musk was, to emphasize the importance of NFT and wanted to encourage the involvement in charity using the crypto sphere. Conventionally people use to buy the physical memorable things, but the trend is not shifting towards the ownership of digital assets like tweets, snaps, posts, videos etc. because the fans of the artist want to be closer to that artists or content creator. Jack used the Cent platform having “Valuables” option where you can mint and sell the tweets as NFT. Cent is intending to provide creative individuals a platform where they can sell and make more money through the trading of NFTs. Usually, content creators use this platform to post their artwork, writing rather than just posts. On Valuables anyone can auction and offer any tweet, which enables another individual to propose a counteroffer. If the author accepts the offer (logging into the Twitter with his/her credentials) then Cent will automatically mint and create a unique NFT for that tweet.

#### 4.3.5. Weird Whales

The 12-years old young boy known as Benjamin Ahmed is not an ordinary boy. Hailing from London, he is very enthusiast about coding and computer stuff. During the lockdowns, his parents insisted him to learn skills rather than spending time on video games etc., he started learning coding when he was 5 from his father who is a web developer by profession. He started his journey of coding with HTML and CSS then he made a quick progress to dig down further by learning JavaScript and many other programming languages. He initially launched a series of 40 colorful, pixeled avatars which were knows as *Minecraft Yee Haa*. He spent a lot of hours working for this project while using the platform Minecraft. That series did not take much attention in NFTs domain, but he took it as a learning experience. His family supported him to the core for minting these NFTs and the family was very excited to see what the future holds for this kid in this art.

In June 2021, he started coding whales which was the second edition containing 3350 pixelated whales each having a distinguished characteristic. Ahmed spent around \$300 for this project, mainly the gas fee required to mint and get the NFT verified on blockchain platform. He took the inspiration from pixelated whale meme and tried to code the whales by using his own program. He took assistance from YouTube videos to make the base layers of whales using pixel art. Ahmed's second collection took around 9 hours to be sold completely making 80 ETH in a day. Further, he made 30 ETH from the resale market since there is 2.5% royalty rate on each resale of his artwork. Ahmed doesn't have any traditional bank account and he prefers to keep all the value in ETH in the blockchain wallet in which the artwork was traded for. Ahmed is currently working on other NFT projects which will also contain the meme component because he thinks the memes have significant potential in this NFT space. He also intends to make an underwater game featuring the weird whales he already launched. He also launched his third edition on September 18, 2021, featuring Non fungible Heroes, which was also sold out in 12 minutes generating \$5million of total sales.



Fig. 4.3.5. Weird Whales collection <https://www.bbc.com/news/technology-58343062>

Ahmed uses the OpenSea marketplace to mint and sell NFTs connected to the crypto wallets. He might need to make a traditional account for the taxation purpose, but he don't intend to convert the hard-earned cryptocurrency i-e Ethereum and bitcoin.

Ahmed is currently working as an assistant to a United Kingdom artist known as Tjili, to make her artwork digitalized. He is also investing some percentage of his earnings on NFT based projects. Ahmed considers NFT to be an outstanding opportunity and is also optimistic about the volatile nature of crypto world. He intends to dedicate more time to this space and create a business out of this.

#### **4.3.6. Banksy burnt art**

Previous study has demonstrated several examples of converting art into NFT. Many artists and enthusiasts have come forward to present the unique artwork and to buy it with a good chunk of digital currency. But there is another example of destroying (burning) an original artwork – a stunt to make more money. NFT concept has already been quite new and perplexed to understand the logic and motive behind spending millions and billions of dollars to own just a picture or art which could be easily downloaded and taken a clear picture of, but this stunt has left people surprised with a lot of exclamatory questions. Different people had

different questions and opinions about destroying the art, some considered it also expression of an art to generate value and some positioned it very low on the art scale.

An artwork of England based artists *Banksy* was sold in December 2020 by a crypto group which seems quite normal pertaining to the escalated rise of digital work trading. That art was a picture, of an auctioneer pointing at a painting, in Christies- an art market under the title “*I can’t believe you morons actually buy this shit*”. It was a picture from 2006 titled as *Morons* bought for around \$95000 by a crypto firm Injective protocol with an authenticity certificate. A group of crypto activists came with an idea to generate more money out of that artwork and thought of destroying it. A young man (wearing black shirt with Banksy’s girl holding a balloon) with the mask went live on Twitter in which he streamed the burning of Banksy’s artwork and around fifty thousand people watched it. He actually set the art on fire with a lighter and it took around three minutes to turn that artwork into ashes and people started hating that guy. People became so angry and started commenting to that live video as how can someone destroy an artwork which was purchased with fundraising of the investors.

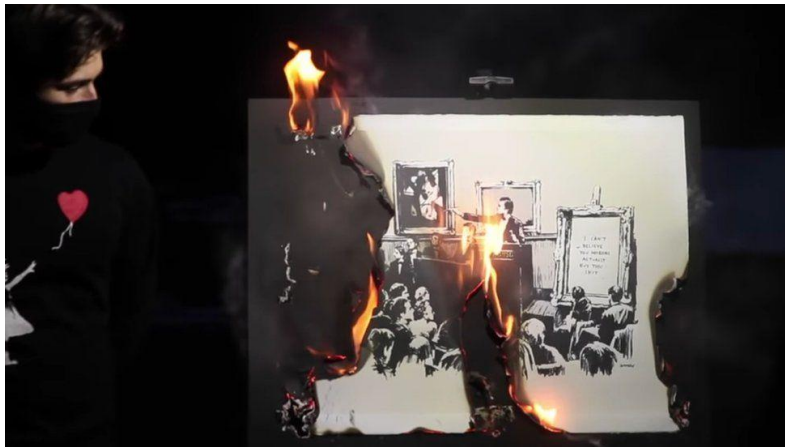


Fig. 4.3.6. Banksy burnt art <https://www.bbc.com/news/technology-56335948>

The NFT video of that burning artwork was ultimately sold out for three hundred and eighty thousand dollars in the cryptocurrency approximately four folding the



original price of that NFT. The BurntBanksy group explained the motive behind this art destruction during some interviews later on. They explained that if the art exists in presence and digital, then the primary value is concerned to the physical asset. They wanted to enhance the value of a digital asset without any physical appearance. They proved this point by this stunt and the NFT value generated was around four times the original art value. This stunt was later termed as the expression of art and that video was auctioned on biggest NFT platform i.e OpenSea which was purchased by a guy named Galaxy.

#### **4.3.7. Disaster girl meme**

Among other applications of NFT, an interesting one to consider is in the meme circle. The social media has been hijacked mainly by the meme creators. Most of the time people spend on their social media scrolling and looking for new meme material and ultimately share them with their friends and family. Hence this concept also entered into the world of blockchain. Tech enthusiasts considered it as a tool to make money and trade the authenticity of prominent memes.

US-based girl namely Zoe Roth became famous at a very young age when her meme got famous and was used to refer to some events in life. At the age of 4, her father took her picture standing in front of a burning house along with a fire brigade truck. She is looking at the cameramen smirking suspiciously, seems she has something to do with the fire accident. Actually, that scenario was a fire drill of firefighters at North Carolina in their neighborhood. Roth's family went to see that house where the fire was setup intentionally and her father asked her to look at the camera and took her picture. In 2007, Roth's father, Dave Roth took part in a photo contest and won due to variations of that photo into different accidents from history.





Fig. 4.3.7. Disaster girl meme <https://www.theguardian.com/technology/2021/apr/30/disaster-girl-meme-nft-sale-zoe-roth>

After all those year, Roth sold her original copy of meme for 180 Ethereum worth half a million dollars at the time of sale. This meme was purchased by Dubai, UAE based studio namely 3F Music studio who has already collected some NFTs before. Before selling her NFT she contacted the creators of other memes “Bad Luck Brian” and “Success Kid” to know how this process works and what is the potential. Roth realized that it can be a wonderful chance to overcome the helpless situation she was facing since she started her elementary school. Her meme was sold for around \$50000 at an auction hosted by Foundation, and she thought of paying off her student loans first and distributing the rest of amount to charity. She’s entitled to royalty of 10% on every future sale.

Currently Roth is around 21 years old studying in university of North Carolina. She herself has been surprised to see the internet doing wonders. She’s also perplexed by this internet fame and craziness for the non-fungible tokens.

## 4.4. Fashion Luxury Case Studies

### 4.4.1. Republiqe:

Recent boom in the crypto space has led the foundation of many such companies and ambitious startups which were underestimated earlier. Before the pandemic, fashion was growing horizontally with the provision of new styles, variety of products, unique designs etc. but the domain remained the same i.e. physical garments. An example of revolutionization of fashion industry is **Republiqe**, a startup launched in August 2020 by James Gaubert, a Singapore based investor. He had spent most of his life working in very renowned multinational fashion brands like Chanel, Burberry and Louis Vuitton etc. He had almost 22 years of experience in fashion industry as a designer. Gaubert already had a close observation about the fashion industry and manufacturing processes which has unsustainable processes and having negative impacts on the resources available. Therefore, he considered launching his own brand, which he had already the vision for, with the motto of having only digital version of garments. In today's life, people are more concerned about how they look on social media rather than in-presence. After the lockdowns this concept has been widely accepted and implemented. But still this thought of creating a "Solo digital clothing" was very naïve and risky, nobody ever imagined having just digital garment but not physical. It changed completely the way of style consumption.



Fig. 4.4.1. Republiqe digital garments collection <https://pressat.co.uk/releases/republiqe-clothing-drops-earth-day-inspired-crypto-fashion-looks-as-nfts-5d6134306820e8751164dced55db0dca/>

Republique, Gaubert explains, is all about creating an “inclusive, ethical, sustainable, and creative alternative” to physical garments. The first collection consisted of 22 virtual garments. Each article has the capability to be made infinite number of times, so the stock never runs out. He also mentioned that the concept of this digital clothing is not to replace the physical one because we ultimately need the physical clothes, but this will be an opportunity to just buy, wear and show-off digitally saving a lot of resources altogether. An individual spends a lot of money and time to purchase a garment which he/she wears only one time for the social media picture and then hardly use it for the next time. It involves manufacturing, ordering, delivery process affecting multiple aspects of sustainability. Whereas the digital garment is manufactured within the fraction of a fraction energy consumed for to produce it physically.

Gauret invested around SGD 93 million (USD 69 million) of cryptocurrency to create this digital art and mint NFTs. Each piece of garment was sold as an NFT, being a unique product owned by a unique customer. Till now this brand has sold around 500 garments within the time span of 6 months. The process is simple as buying from an online store but with an additional step. Customer will purchase the garment (NFT), he/she will be asked to upload his/her picture on the site, which will be used by the designer/stylist to render and give it a new perspective. The winning bidders had their e-tailored photos and received raw files use to generate that garment. Those files also include the unique tracking number linked to that owner which shows the ownership. That garment is created sustainably, ethically, and that too with small amount of energy consumption. This brand has taken a different route to reach the market targeting different type of audience. Also, the owner mentioned there are different brands entering into this domain, which doesn't become our competitors but instead it's a validation of what we are doing recently. Creating garments digitally isn't just another version but it's a shift in the paradigm of clothing world. This allows consumers to “*look amazing without their comfort at home*”. Gauret also got endorsement for this type of concept when he saw his son spending a lot of money for customizing different skins in Fortnite

avatars, which is also a source of helping people generate their social profile and involve in the creativity of such digital garments.

#### **4.4.2. Louis Vuitton:**

Louis Vuitton is a famous French fashion luxury house founded in 1854 by the founder named *Louis Vuitton* in Paris. It is one of the world's leading fashion brands which deals in variety of products like leather wears, shoes, watches, accessories, and sunglasses etc. Due to the surge of blockchain and NFT technology, the luxury fashion brands are moving towards these technologies and getting benefits to promote their brands as the interest in digital arts is taking off.

On August 2021, Louis Vuitton took a step ahead in order to blend fashion with technology and launch a video game based on NFT named *Louis: The Game* to celebrate the 200<sup>th</sup> birthday of its founder. The video game is all about the journey of founder and the history of brand. Players while playing the game take the role of brand's most famous mascot Vivienne to collect candles across the fascinating terrain based on the monogram of brand. There are 200 candles in the whole game and each candle unlock the postcard that depicts brand's history and details of the journey of young founder in Paris. These postcard reveals the innovation, collaboration, and highlights of its different shows of Louis Vuitton. The game is actually the communication of brand with its audience or customers related to heritage and creativity of brand who are not familiar with journey of Louis Vuitton. The game features 30 NFTs, ten out of them were designed by the well-known digital artist Beeple. Different brands and companies are introducing NFT for the sake of profit by trading NFTs, but Louis Vuitton introduced NFTs in the game as collectibles (exist only in game) but not for the sale.



Fig. 4.4.2. Interface of Louis Vuitton game <https://www.wwd.com/fashion-news/designer-luxury/louis-vuitton-200-bicentennial-celebration-1234889762/>

Louis Vuitton as luxury fashion brand targets rich women particularly between the ages of 35 and 54 and also the young fashionable adults. Whereas the attraction of younger generation is not that plentiful towards the brand. That's why the main idea behind the creation of this video game is to attract the young customers. Although the game was marketed for the people of all ages but from the addition of NFTs it seems like it has been designed to engage more youthful customers.

#### **4.4.3. Clothia:**

A wonderful example of technology meets with fashion is, Clothia. A startup recently founded by a Russian based computer-science student Elena Silenok. Elena was very enthusiast about fashion and whenever she used to go her home country, her fellow colleagues used to ask her about the designer of the dresses she used to wear. Usually, she used to buy it from USA. When she spent some time in New York and observed the inclination of fashion in the minds of people, she thought of using her computer science experience into fashion. She thought of integrating the technology into fashion with two important motives, one was to introduce designers to the people from all over the world, be it a lager city or a small town. Second purpose was to create an eco-friendly atmosphere for the designers. She learned that designers used to spend a lot of time on whole supply chain of the fashion luxury, resulting in the very less time left for the core-designing process. Designers use to consider all the stages of supply chain including the

design, marketing, manufacturing, packaging, and delivery process of a single garment including the fabric that is going to be used for its production while launching a brand. That's how she created this platform named as Clothia to provide an unusual experience to the designers as well as customers. Customers can use the virtual dressing room to see and try that clothing and also share it with their friends and family to know possible reviews before finalizing the product. Simultaneously, designers can easily reach a massive audience by proposing their designs on a single platform.

However, due to the main characteristic of NFT, scarcity, Elena also integrated this concept in this startup and each garment was assigned to a specific NFT. A single dress or a garment can be bought using an NFT and the ownership is immediately transferred to that individual. Clothia called them as "Wearable statement pieces" that enhances the self-expression and individual creativity. It provides the range of clothing accessible to people from \$100-\$500. There are already brick & mortar boutiques available in USA, which provides the range of customized design. But the concept of Clothia is slightly different. The brand enables people to integrate the virtual and physical clothing to encourage the self-expression. This allows women to self-express, customize and render the sense of fashion using the technology whereas designers from a very small brand can reach the bigger retail market in USA as well.

Furthermore, Elena integrated the NFT to the physical garment calling it a "Digital twin" and auctioning it as NFT dresses. Winning bidders are able to buy the digital non-fungible token which is same as the physical garment. For this, Clothia introduced \$CLOTH, Crypto coin by Clothia which was earlier launched on the platform i-e Rally.io, the first fashion industry to announce its own cryptocurrency. \$Cloth enables people to easily reach out to one another and earn gifts as they sell, buy, or engage into the brand community. Customers will be able to get in touch with their favorite designers and will get to know about their upcoming releases. Buying from Clothia platform allows to get several benefits like, bonus encapsuled to the NFT being purchased, one-one advice from the designers on

how to use/wear specific dress, access to designers' shows either virtual or in-presence and some surprise benefits occasionally published by the Clothia company. The interface of brand auctioning NFTs looks something like the figure below:

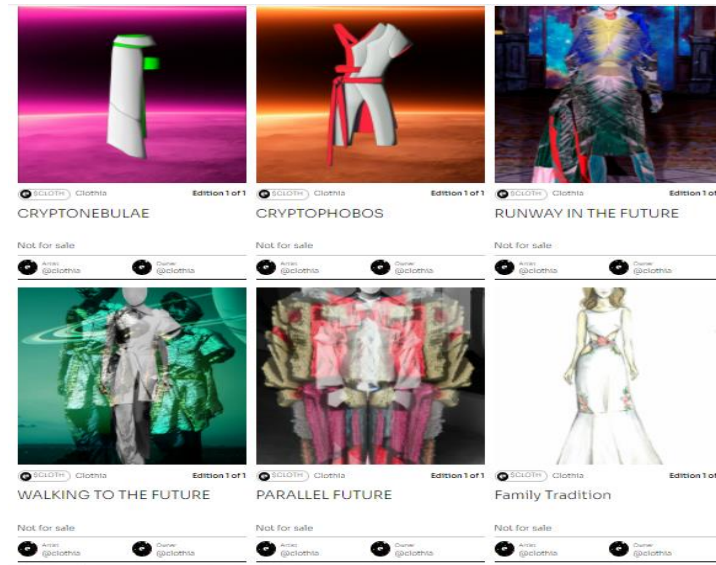


Fig. 4.4.3. Virtual garment collection of Clothia, <https://nft.rally.io/clothia?tab=1>

#### 4.4.4. Takashi Murakami and RTFKT Studios

RTFKT (pronounced as artifact) is a futuristic version of fashion introduced by 3 creative friends, Chris Le, Benoit Pagotto and Steven Vasilev in 2019. Covid lockdown proved to be a blessing for these three entrepreneurs. Chris Le, one of co-founder of RTFKT, was sitting in his basement one night wearing virtual reality glasses and making the virtual products on computer. He was quite fond of gaming and to produce in-game items. Exactly a year later he became a multi-millionaire by introducing virtual sneakers without any factory to make them. Before covid he invested around \$1.5 million into his startup named as RTFKT studios. But later on, he and his co-founders setup different computers for the sole production of virtual sneakers which could be traded as NFTs. The main goal behind formation of this brand was to make a blended combination of games aesthetic and fashion luxury. Initially they planned to introduce this concept by 2040 but the rapid



revolutionization in the intersection of luxury and technology has made this possible way earlier than anticipated. The founder & co-founders of this brand intends to take the support of AR to conquer this digital revolution. There are multiple projects launched by RTFKT recently which includes Atari, FEWO world and NZXT etc. With the Atari collection, the brand has introduced around 1000 wearables on the Decentraland.

For Chinese New Year, brand designed a pure gold sneaker which was auctioned at a Chinese marketplace Treasure land and ultimately sold out for \$28000 which was a quite surprisingly high price for the brand recently launched and that too for a sneaker which doesn't exist in the real world.



Fig. 4.4.4. Virtual sneaker by RTFKT, <https://jingdaily.com/rfkt-nft-luxury-chinese-new-year/>

By October 2020, this brand was able to sell its first pair of virtual sneakers for 30 ETH (Valued around \$90,000 at that time) which set the record of highest paid digital fashion item. By the April 2021, brand was able to sell around 600 virtual sneakers via NFTs worth revenue of \$3.2 million within just seven minutes. The future of RTFKT is to dig down into the virtual world and to have their own metaverse. First and the foremost, they want to be a brand which is highly adoptable in each kind of virtual reality AR, VR etc.

#### 4.4.5. Burberry

Like other brands, British based company, Burberry has also stepped into this crypto world at this very right moment and people are really enjoying it. Burberry, the fashion luxury industry, decided to extend its domain from fashion and to collab with another favorite sector of the consumers. *Gaming* has been very attractive



sector for Gen Z. Initially Burberry introduced summers collection by the name of TB monogram (Thomas Burberry) which were available for purchase from July 2020 and also in July 2021. The monogram was designed by Chief creative officer Riccardo Tisci. Later on, taking the legacy forward, Burberry decided to create value by integrating fashion experience into the gaming sector by enhancing the use of cryptocurrency and minting NFTs. Brand committed to launch limited edition of in-games items starting from 11 august 2021.

Burberry is empowering the use of NFTs by partnering with mythical games under its flagship title, which was announced in June 2021. Blankos block party game is led by the gaming industry enthusiasts who works for the player-owned economies and were behind the creation of major games franchise i-e Marvel strike force, call of duty, Guitar hero and DJ hero etc. Blankos Block Party is the multiplayer party game which includes digital characters which are called Blankos that exist on the blockchain, through the use of NFTs individuals can claim the unique ownership and authenticity. These characters can be bought, upgraded, and sold on the Blankos block “party market” with one-one transaction for real money. Players can have fun playing and competing with their friends and family by owning different characters in the minigames resulting in the use of NFTs. Even though Burberry has been first fashion industry to enter into this gaming world, but his collaboration has been a great success for both parties and people have been very crazy about it since it has been launched.

Sharky B – one of the characters from the Blankos block party game was sold out within the first 30 seconds of its launch. There were total 750 units of it and now this NFT is being sold at the price of around \$1000 USD in the marketplace. Sharky B can be trained with multiple attributes including the speed, power and agility ensuring the ownership and uniqueness of the character. Another character Jetpack, had around 1000 units and \$100 USD each, was also sold very quickly after its launch. They are also planning to launch other accessories which include arm bands, bracelets and pool shoes etc. which consumers can buy and apply to their characters.

The illustration of Burberry Blanko Sharky B NFT can be seen in the figure below:

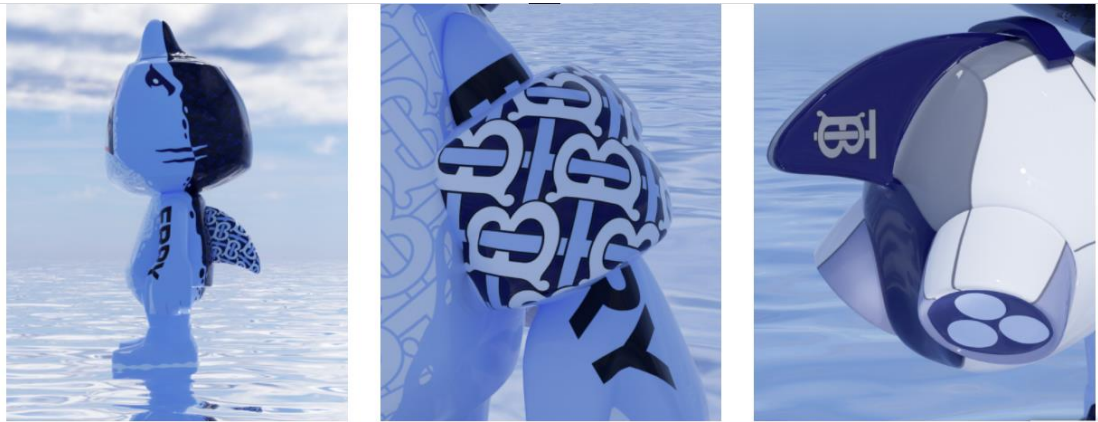
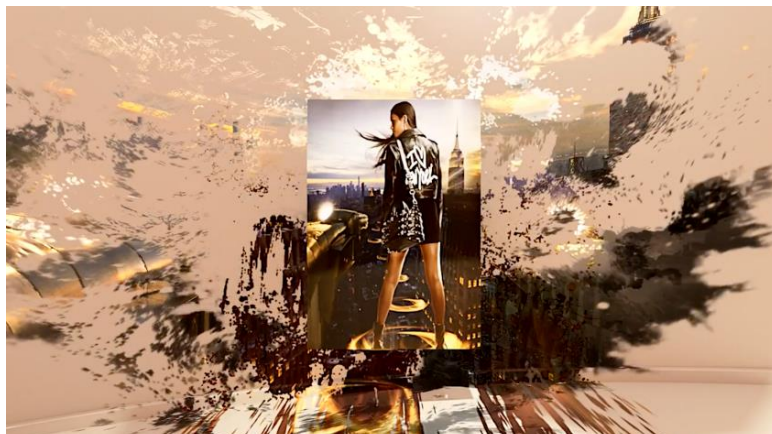


Fig. 4.4.5. Blanko Sharky by Burberry, <https://www.burberryplc.com/en/news/brand/2021/Blankos.html>

#### 4.4.6. Rebecca

Fashion designer Rebecca Minkoff based in USA, famous for her innovative designs, has entered into this current trend of blockchain. She is the first female designer to mint NFT for her collection. Rebecca has plenty of experience in her designing career and she thought of introducing her new collections on 20<sup>th</sup> anniversary of the brand. She introduced the “I love New York” shirt which got her an overnight success across the United States. She was very excited to learn the potential of this new crypto world and how to use blockchain for the creativity in the fashion world. She considered collectibles to be the most attractive tool for coming generation and interaction into the metaverse. Her brand was already remarked for the interaction of fashion with digital tools, and she introduced her fall collection in February 2021 featuring QR codes in her merchandise at OnlyFans platform. Another motive was to include benefits regarding the NYFW interaction which could possibly attract more audience since the Rebecca partnered with yahoo having around 900 million monthly users.

In September 2021, she partnered with yahoo to introduce her fall-holiday line as a series of images captured by an incredible photographer Cass Bird at Spring studios. Yahoo's immersive XR platform was used to mint the in-house collection of 3D gallery. The main idea behind this exhibition was to introduce new collection through the digital tools and to mint NFTs. Both brands decided to use the most reliable and renown platform OpenSea for minting and trading NFTs. The NFT minted by Rebecca included a picture along with some other benefits like owner will get two tickets for the upcoming New York fashion week (NYFW), a signed physical bag by Rebecca and a private videocall with Rebecca. The resale of that NFT was linked to a royalty structure in order to support the charity with a continuous donation. Within that virtual gallery, costumers were able to buy the styles by pressing "Shop now" button. Viewers could see the new styles and simultaneously scan the QR codes associated to bid on the selected styles. The initial collection consisted of 10 original NFTs and 221 editions were photographed



4.4.6. Rebecca 3D art work,

<https://finance.yahoo.com/news/close-yahoo-x-rebecca-minkoff-214350740.html>

by Cass Bird. Bidding was set to be time-based which lasted for four days i-e 10-13<sup>th</sup> Sept 2021. Along with the bidding costumers are able to buy those digital collections at the platform called Dematerialized. Since Rebecca realized that a lot of people were adversely affected throughout the world during the pandemic situation, she announced to process all the fundings recovered by her NFT auctioning to be sent to Female Founders Collective to support the businesses that were run by females. Both brands are planning to extend their domains

especially yahoo. It has been the first step for yahoo to enter into this new world of blockchain to experience and experiment the reaction of the audience. Now Yahoo is planning to take it very far to other sectors like sports, finance, and gaming followers etc. Yahoo wants to be an active member to this metaverse and to be part of this digital innovation and interaction.

#### **4.4.7. Balenciaga x Fortnite**

One of the most expensive collaboration by fashion queen Balenciaga with video game Fortnite has also entered into the digital space. Balenciaga, being one of the most famous brands for fashion and luxury, has taken this step forward to produce in-games items and limited number of physical garments associated to the non-fungible tokens (NFTs). Balenciaga creative director also mentioned that “today customer’s doing gaming and therefore it’s a crucial luxury customer base”. Fortnite is a battle game launched by the Epic Games. Initially, Balenciaga did the partnership with another game called “*Afterworld: The age of tomorrow*” and then proceeded further with introduction of new collection into the Fortnite. Epic game collected around 350 million registered accounts and players spend around 3.3 billion hours in gaming during April 2020 as per. Through this collab, Balenciaga will be able to meet new audience i-e players and simultaneously Fortnite would be interacting with fashion enthusiasts and as a result people would be taking privilege of customizing their outfits in the Fortnite game with the Balenciaga accessories along with the physical garments.

Fans who purchase the physical garments will get the provision to unlock same outfit in the Fortnite game. Players can interact and hang out with link minded gamers with customized looks by purchasing Balenciaga fit outfits to their inventories. The hub started their collection for 8 days i-e 21<sup>st</sup> sept to 28<sup>th</sup> sept 2021. In-game items were produced on the basis of already existing 3D designs of Balenciaga. Fortnite then put efforts to make this blended version an asset for the customers. Luxury brands are somehow out of the affordability of average

people but still an average player spent around \$102 for in-game purchases in Fortnite game according to the analysis of an online marketplace LendEDU. People are spending a good chunk of money to chase this new digital trend.

In the Fortnite game, players would be able to buy the Balenciaga outfits and accessories. Players will be provided with Balenciaga store and can perform custom Balenciaga dance as well. Individuals can customize their looks in Balenciaga store and submit their photos for inclusion into the virtual billboard in Fortnite town square. The billboards were featured in multiple countries including United states, United Kingdom and Japan etc. Players can post their pictures on twitter with the hashtags #Fortography and #StrageTimes to get featured in the billboard campaign. Balenciaga introduced 4 in-game characters, i-e Unchained Ramirez outfit, Shady doggo outfit, Fashion Banshee outfit and Game knight outfit, which are illustrated in the figure below:



Fig. 4.4.7. Balenciaga characters collection -

<https://www.dezeen.com/2021/09/22/balenciaga-fortnite-video-game-fashion/>

#### 4.4.8. Karl Lagerfeld:

Having a prominent reputation in the history of fashion designing, Karl Lagerfeld worked with quite famous luxury fashion brands including Chanel and Fendi. He remained Creative director of Chanel for around 36 years. He then led the

foundation of a company after his own name. He passed away 2 years back in 2019 and to pay a remarkable tribute to the owner, team experimented the clever marketing strategies to announce the first edition of NFTs on the birthdate of Karl. Brand used the platform Dematerialized to mint NFTs. Playing with the lucky number of the brand i-e 7, they introduced the first edition with 777 pieces of collection worth 77 euros each. The second version, shiny metallic NFT figure, had around 77 pieces worth 177 euros each. It took around 37 seconds for more expensive version to be sold and the second cheapest version took around 49 minutes to be sold on the marketplace. The third version, recently launched in October 2021, consisted of 300 items worth 77 euros each as per The NFTs are tamper-free JPEG files but proves the authenticity and ownership as the key characteristics of blockchain technology. KL featured the pictures in their collection inspired by a very famous quote of German designer *“I am like a caricature of myself, and I like that”*. That exclusive collection was based on Karl Lagerfeld himself and his distinguished look. NFTs were of two types: Chromatik Karl and Ikonik Karl and provided four methods to use those NFTs. Customers can share those on twitter, access the AR version of Karl via snapchat, showoff that masterpiece on their blockchain platform or capture that in the augmented reality (AR). Those NFT were also auctioned with the motto of donating that amount to charity and to support the community.

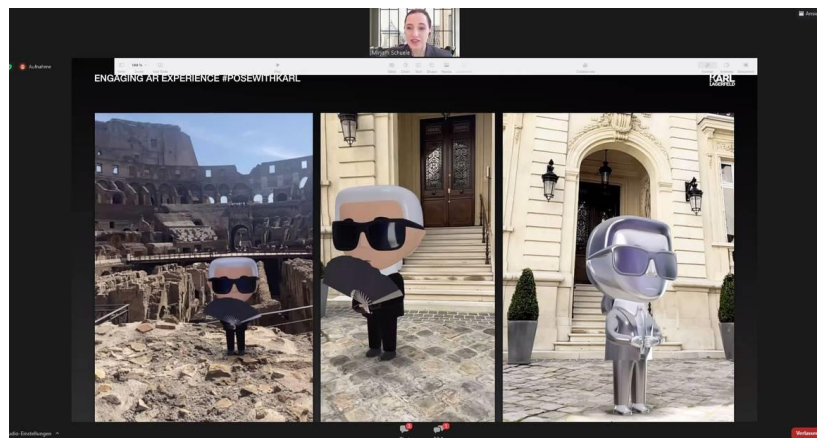


Fig. 4.4.8. Karl Lagerfeld NFT - <https://fashionunited.uk/news/fashion/sold-out-in-33-seconds-what-is-the-fashion-nft-phenomenon-all-about/2021092958034>

#### 4.4.9. Overpriced hoodie

A streetwear fashion brand **Overpriced** founded earlier this year by James Zwadlo and Chris Lefett (the successful founders of the Patrick Mahomes NFT). It defines itself to be the brand making “Fashion for the crypto generation”. Overpriced is a luxury fashion brand intending to explore the intersection of digital and non-digital entities to provide a premium experience to the customers i-e combining NFTs and clothing to make the unique wearable art. This brand has got significant attention after the idea was put into the market and how people started loving it.

*“We are a group of artists looking to create art-powered crypto fashion that aims to challenge the conceptions of what luxury fashion is,”* James said.

A physical hoodie may not be of much worth, but the idea popped up into the minds of these group of artists to use NFT platform to explore and exploit the physical hoodies along with it. NFT creation was based on a physical hoodie which is linked to scannable V code. That hoodie can be worn, authenticated and user can show off his/her NFT through an image link on a smartphone.



Fig. 4.4.9. Overpriced hoodies with scannable V code - <https://www.theguardian.com/fashion/2021/apr/15/virtual-hoodie-sells-non-fungible-token-nft-overpriced>



The founder of Overpriced brand commented over the expletive-laden slogan (as it can be seen in the figure above) on the hoodie was about how people are crazy about fashion and to show off how much money they have, while acknowledging their hoodies are massively overpriced. The main motive behind creation of this NFT was, anyone can scan that V-code through smartphone to check the price of the hoodie and to know the ownership record of the same garment.

This represents the perfect utilization of NFTs and technological innovation which creates the value for a buyer. It gives the sense of ownership along with the blended experience of physical & digital world. If that hoodie is lost, damaged or stolen the corresponding V-link will be expired or invalidated. Thus, a new hoodie of the same type will be sent to the customer's doorstep becoming the new unique item. The auction took place on 13<sup>TH</sup> April 2021 and the first addition hoodie was sold out in \$26000 USD the very next day. According to the designers, this pricing has proclaimed the value through a digital token rather than just physical garment. First season contains 25 NFTs along with physical garments, they decided to put first 10 for trading and the rest of hoodies will be gifted to the artists and influencers working in different sectors i-e Music, art, gaming etc. The Overpriced company utilized the BlockParty platform to trade the first NFT. Blockparty is an NFT marketplace and storefront platform for brands and creators.

#### **4.4.10. Dolce & Gabbana:**

It is an Italian luxury fashion house which was founded by two Italian designers, Domenico Dolce and Stefano Gabbana, in 1985. With the increasing buzz of non-fungible token (NFT) across the world and jumping into this technology by different fashion brands, D&G also entered into the world of NFT. The debut collection of the brand was launched at D&G shows, Alta Moda, Alta Sartoria and Alta Gioielleria which took place in Venice from August 28 to 30 in 2021 that involved both digital and physical work. The design collection was inspired by the culture of



Venice and titled as 'Collezione Genesi' in collaboration with UNXD which is a platform that designed the digital assets.

D&G entered into the field of NFT when the CEO of UNXD, Shashi Menon, and his team approached D&G with the idea of launching the new collection based on NFT. She shared the idea and focused on the opportunity to blend the fashion luxury sector with crypto world. She believes that introducing fashion with NFT is not all about the technology but the way to express the culture and it is the most important ingredient from a brand's perspective and blockchain technology plays a vital role for this purpose. Furthermore, she explained that the NFT collection of D&G is historic and would open new doors for the brand as she believed that the designers and founders were personally involved in the project and the collection, which features nine pieces of NFT, was very rare because this is one time collection and it would never launch again in the future.

The NFT collection 'Collezione Genesi' was quite limited and exclusive with the brand's name. Each of the nine NFTs pieces was one-of-a-kind object that included a physical item designed by Domenico Dolce and Stefano Gabbana as well as a digital high-design film. Out of nine, five pieces were physical creation designed by Dolce & Gabbana (virtually iterated by UNXD), there were two versions of 'The Dress from a Dream' in silver and gold, one emerald, green men's suit named as 'The Glass Suit' and other two gold plated, and silver crown titled as 'The Lion Crown' and 'The Doge Crown' respectively. The purpose behind the creation of digital fashion pieces was to provide new experience to the customers who can enjoy the virtual world through this collection. Upon creation of this collection Menon said that we in collaboration with D&G are proving new experiences to the buyers of Genesis as the collection is a bridge between the digital and physical world and this has never been happened before. Through this collection we are providing to our customers digital utility of products through metaverse.

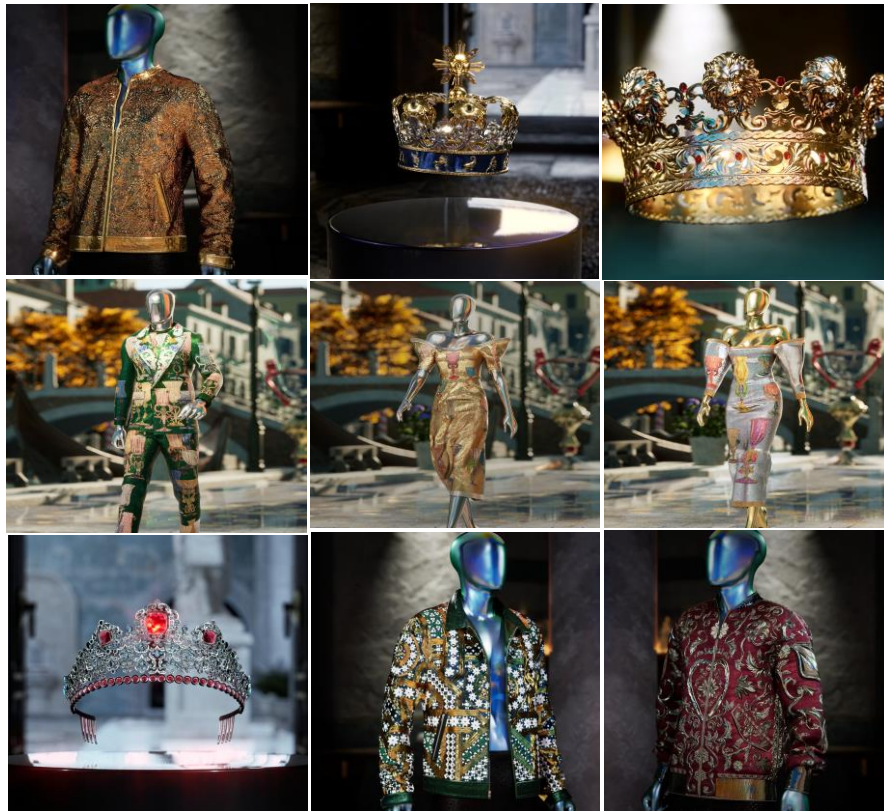


Fig. 4.4.10. Nine pieces of NFT by D&G as per <https://unxd.com/drops/dolce-gabbana-collezione-genesi?selected=all>

The response of the customers was quite impressive and according to D&G, along with some physical couture pieces the sales of nine-piece NFT collection touches to 1885.7 ETH which was equivalent to \$5.7 million USD at that time which was auctioned at UNXD platform. The most expensive piece sold out was 'The Doge Crown' which was purchased by Red DAO (fashion-focused decentralized autonomous organization) for \$1.27 million USD at that time. According to CEO of UNXD, Dolce & Gabbana is also planning to launch its own NFT community known as 'DGFamilY' which will be launched in the near future.

#### 4.4.11. Jimmy Choo

Jimmy choo is a famous fashion luxury brand in Malaysia founded in 1986 which is well known for its handmade women shoes. Similar to luxury fashion brands,

Jimmy choo also announced its first step into the digital art by launching NFT initiative in collaboration with New York artist, Eric Haze.

In October 2021, Jimmy choo introduced the world with a one-of-a kind NFT for auction along with the 8888 mystery boxes. The auction and purchasing was all done on Binance NFT marketplace. This collection reinforced the collaboration of fashion, art, and street culture together. The animated artwork of the digital version of the sneaker was developed by the brand and the NFT featured the sneaker rotation against the signature script of Haze and is digital without having existence in physical world. Alongside the NFT, the winner of the bid received a pair of hand painted limited-edition of sneakers. The launch of the digital sneakers was made through the buying of mystery boxes. NFTs, randomly assigned to each mystery boxes, are divided in four levels of scarcity: one super super-rare card, 445 super rare card, 3109 rare cards and 5333 neutral cards. The buyers purchased without knowing which card they will receive. All these mystery boxes launched on October 20 on Binance platform for 30 Binance USD (or 13672 USD at that time) and whoever collected SSR and SR from the mystery box is entered into a new draft and they will have chance to receive a super rare NFT design by Jimmy Choo random NFT (only 100 have been minted so far) which is going to be launched in the near future.

The purpose behind this project was not only to get into NFT world but there were two reasons behind it. One is to uplift its product culturally through the process of digital art marketing and collecting. Second was the charity because all the profit or gains from the auction was donated to Jimmy Choo foundation in support of Women, a non-profit organization focused on helping out the females who were survivors of wars to rebuild their lives.



Fig. 4.4.11.a. Virtual sneaker by Jimmy Choo  
[www.binance.com](http://www.binance.com)



Fig. 4.4.11.b. Mystery Box by Jimmy Choo -  
<https://cointelegraph.com/>

#### 4.4.12. Gucci

Gucci is a world-famous iconic fashion luxury Italian powerhouse that founded in 1921 in Florence by Guccio Gucci. It specializes in ready-to-wear, footwear, handbags, fragrances, makeup, and accessories. Gucci entered the world of NFT in June 2021 and launched its first minted NFT, inspired from its famous video called Gucci Aria. It was auctioned on Christie's platform and Gucci was marked as the first luxury brand who launched NFT through Christie's.

The NFT is a four-minute-long film titled "PROOF OF SOVEREIGNTY: A Curated NFT Sale by Lady PheOnix" directed by the filmmaker Floria Sigismondi and creative director of Gucci Alessandro Michele. This is the artwork developed by using the digital animation from Gucci Aria which is actually the latest fashion presentation of the brand. Gucci Aria was launched on the eve of 100-year anniversary of the brand and showed the legacy of brand in the video which laid the perfect foundation of Gucci's first NFT.



Fig. 4.4.12. Interface of film by Gucci-

<https://hypebeast.com/2021/5/gucci-nft-debut-film-aria-collection-inspired-announcement>

The purpose of minting the NFT is to engage brand with the customers who are willing to buy luxury products in a different way as compared to traditional marketing and advertisement, and also to do charity for the affected ones during pandemic. All revenues from Gucci's Aria NFT sale went to UNICEF USA to help the organization's efforts to ensure that everyone in the world has equal access to COVID-19 vaccines. The starting bid for the NFT was \$20,000 USD and concluded at \$25,000 USD, and the auction took place at Christie's during June 2021. In order to reduce the environmental impact linked with the creation process of NFT, Gucci teamed up with Offsetra, purchasing 10 Tons of carbon offsets.

#### **4.4.13. Krigler**

Krigler is a luxurious perfume model founded in 1904 by Albert Krigler in Berlin. Krigler's perfumes have been famous since 1920 and are liked by world's famous celebrities and representatives of royal houses. Krigler has legacy of more than 600 different perfumes, only fraction of them is available today. From clothing, footwear, and accessories, now the craze of NFTs is moving toward the luxury fragrance brands and Krigler is the latest entrant from this sector who adopted NFT technology.

The luxury brand launched a unique leasing programme through which customers can lease an old fragrance but only for one year. Since, Krigler wanted to take the

initiative of launching its first NFT, the brand associated this leasing programme with NFT in June 2021. This NFT is a digital video of the leased perfume that highlights the history and details of the leased perfume. About this project, the head of brand believed that the creation of digital video as an NFT is a unique way to describe the fragrance and the main inspiration behind the creation of perfume and this is the legit way to give artistic ownership certificate to its buyers. The well-known perfume of Krigler and its associated NFT 'Krigler Grand Bonheur 54' is a scent that was initially launched in 1954 for the marriage of famous Greek banking inheritor. They announced that whoever purchases a fragrance will get the ownership of both perfume and its NFT for 12 months. The cost of perfume and its NFT was initially \$8000 and later the valuation of this jumped to near about \$150,000. The buyer got the ownership for 12 months.



Fig. 4.4.13. Krigler Grand Bonheur 54 - <https://news.yahoo.com/krigler-gets-nfts-150106527.html>

The inspiration that brand got for creating the NFTs was the engagement of their models with blockchain technology and cryptocurrency. And also, the brand wanted to preserve the memories of its famous scents through the concept of NFT and it is the perfect way to do so and a new form for the brand to highlights its creativity.



#### 4.4.14. Jacob & Co.

Jacob & Co. is a luxury jewelry and wristwatch brand so called streetwear jeweler, founded in 1986 by diamond designer Jacob Arabov. The first boutique and headquarter of brand is located in New York, USA. Jacob & Co. has never been like a traditional wristwatch maker and has always dipped his toes into the technology. With the emergence of blockchain technology, it was the first luxury brand that stepped into the NFT world in April 2021. With the vision of first luxury brand introducing NFT, the brand's founder said.

*“My hope is for Jacob & Co. to become the first luxury brand to launch a successful NFT and pave the way for other luxury brands to start launching products & collections through NFT. It’s not a matter of ‘if’ NFTs will have a place in the watches and luxury world, but ‘when.’ For Jacob & Co., the ‘when’ is now, and we are prepared to pioneer this shift.”*

The first NFT project of Jacob & Co. is a digital unique piece which is named as “NFT SF24 Tourbillion” and announced the partnership with one of the famous NFT platforms, ArtGrails. This digital work was offered at a five-day auction from April 4, 2021 with starting bid of \$1000. The brand's first digital asset is inspired from its own watch Epic SF 24 which was a groundbreaking travel watch mounted with traditional split-flap timetable display which lists 24 cities around the world and is often displayed at airports. But, unlike the Epic SF24, this new version of watch based on NFT includes the functioning of tourbillion and instead of showing cities, the split-flap system shows the top 10 different cryptocurrencies such as Bitcoin, Ethereum, Fantom etc. in 10 second short animation. The highest paid bidder received physical trappings of the unique digital asset of the brand such as the certificate of the ownership and a casing. In addition to basic information such as manufacture date and time, company (parents) and product type, this identity allows the watch to be verified on the Internet as a "Trusted Object" and shows its authenticity. The box of the watch also contains the hard drive with the NFT that is

the digital representation of the watch. The owner will be able to re-sell the watch and NFT after the auction and transfer the ownership to the other person. The unique and digital piece of watch by Jacob & Co. auctioned 24 hours on the ArtGails NFT platform and fetched the amount of \$100,000 at the end of the auction. The buyer of this masterpiece is still unknown to the world.



Fig. 4.4.14. NFTSF24 Tourbillion as per <https://gothammaq.com/jacob-and-co-sells-nft-watch>

#### 4.4.15. Bulgari

Bulgari is a well-known Italian luxury brand which is famous for its jewelry, fragrances, watches, leather goods and accessories. The brand was established in 1884 by Sotirios Voulgaris. The first store was opened in Rome and founded the headquarters of Bulgari in the same city. Bulgari has always been updated itself with the new emerging technologies and now 137 years old world-famous Italian brand is planning to stepped into the digital world and is going to launch the first NFT art piece by transforming its famous Serpenti snake into a digital artwork based on the artificial intelligence.

For creating the brand's first ever NFT, the Rome based jeweler, Bulgari, teamed up with the award-winning artist Reflik Anadol to create a unique piece of digital



art which is said to be the first artificial intelligence-based artwork for any luxury brand. The iconic snake design of the brand merged into metaverse and will be auctioned as a NFT in the future. The motive behind this artwork is to represent the development of Serpenti and referred it as “Serpenti Metamorphosis”. This dynamic 3D sculpture created by media artist Anadol has added 70 millions of pictures of plants and nature in order to develop the first artificial intelligence-based artwork for the fashion luxury brand. The artist was very inspired by this digital work as he believed that the machine intelligence has potential to merge different patterns, shapes and natural colors and form new shapes that we have in our minds, so with the help of this technology we transform our thoughts into reality. This artwork has been installed at Piazza Duomo of Milan and the visitors felt the multisensory experience with the entire wall to ceiling screen presenting the artificial intelligence based digital art. Within the sculpture, the snake images come to life which is an additional feature to the brand’s emblem which was possible just because of the algorithms of machine learning. In addition to visual display, the brand’s famous fragrance, the scent of Rainforest Serpenti, diffused in real time which compliments the digital artwork.



Fig. 4.4.15. Serpenti Metamorphosis- artwork by Bulgari based on AI - <https://jinqculturecommerce.com/bulgari-serpenti-metamorphosis-refik-anadol-ai-nft/>

As part of the celebration of the Serpenti Collection, the immersive experience begins in Milan and travelled to several cities around the world which ended up in

the creation of a multidimensional piece of NFT art that will be auctioned. All the proceeds that will be collected from the auction of this art as NFT will be donated to charity as per the CEO of Bulgari.

#### **4.4.16. Hermes: Baby Birkin:**

Hermes is a well-known French luxury fashion brand established in 1837 by Thierry Hermes. Hermes established the first workshop in the Grand Boulevards quarter of Paris. The brand specializes in leather goods, ready-to-wear, lifestyle accessories, perfumes, jewelry, and watches. A “Baby Birkin” is an NFT which is an animated video of a baby growing in Hermes famous bag called Birkin. The auction of this pixelated animated NFT was held on the famous platform, Basic.Space.

This artistic work of NFT was created by two Los Angeles based artists named Mason Rothschild and Eric Ramirez. These two-master minds decided to convert the iconic bag of Hermes into the virtual bag as an NFT “Baby Birkin”. With their exclusive design, this duo says that “*the NFT version of virtual bag is rarer than any physical bag*”. This mind-blowing digital piece of virtual bag is transparent which features 3D 2000x2000 pixel animation of 40 week pregnant, 25-centimeter growing fetus accompanied by space-like backdrop and themed song. As it grows, the baby moves around the bag over the time.



Fig. 4.4.16. Baby Birkin bag - <https://www.highsnobiety.com/p/baby-birkin-nft-basic-space/>

Unlike the traditional Hermes Birkin, this version of virtual bag does not exist in physical world, nor it is supported by the designer brand. Due to the fact that Birkin bags are so rare and difficult to lookout for because they are hard to secure in the first place. The brand's products always has mysterious waitlist with the high price tags ranging from \$8500 to \$2 million USD and scarcity makes the brand products incredibly hard to buy. It can take months or even years to obtain unless you are a high-profile celebrity. Therefore, this online version of virtual bag is available immediately and the buyer do not need to wait for months and years.

"Baby Birkin" as an NFT was auctioned on the Basic.Space platform for one week started from 13 May 2021. In total, 32 bids were placed, and it was sold out for \$23,500 to buyer named Aki Hayashi. According to Basic.Space, Aki Hayashi placed four times bids on the virtual bag and won the bid with the amount of \$ 23,500.

# Chapter 5

## 5. Discussion

### 5.1. Analysis:

Considering the different applications of non-fungible tokens in the fashion luxury industry (as seen in section #), it's intended to make an analysis of this NFTs and it's usage. Although every technology has its pros and cons but the blockchain has been found to be authentic so far. The analysis builds on the areas in which NFT can perform well, the drawbacks of using this technology and the associated opportunities and challenges. It aims to focus on the unique factors of this technology, making it worldwide prominent and the future of the virtual world.

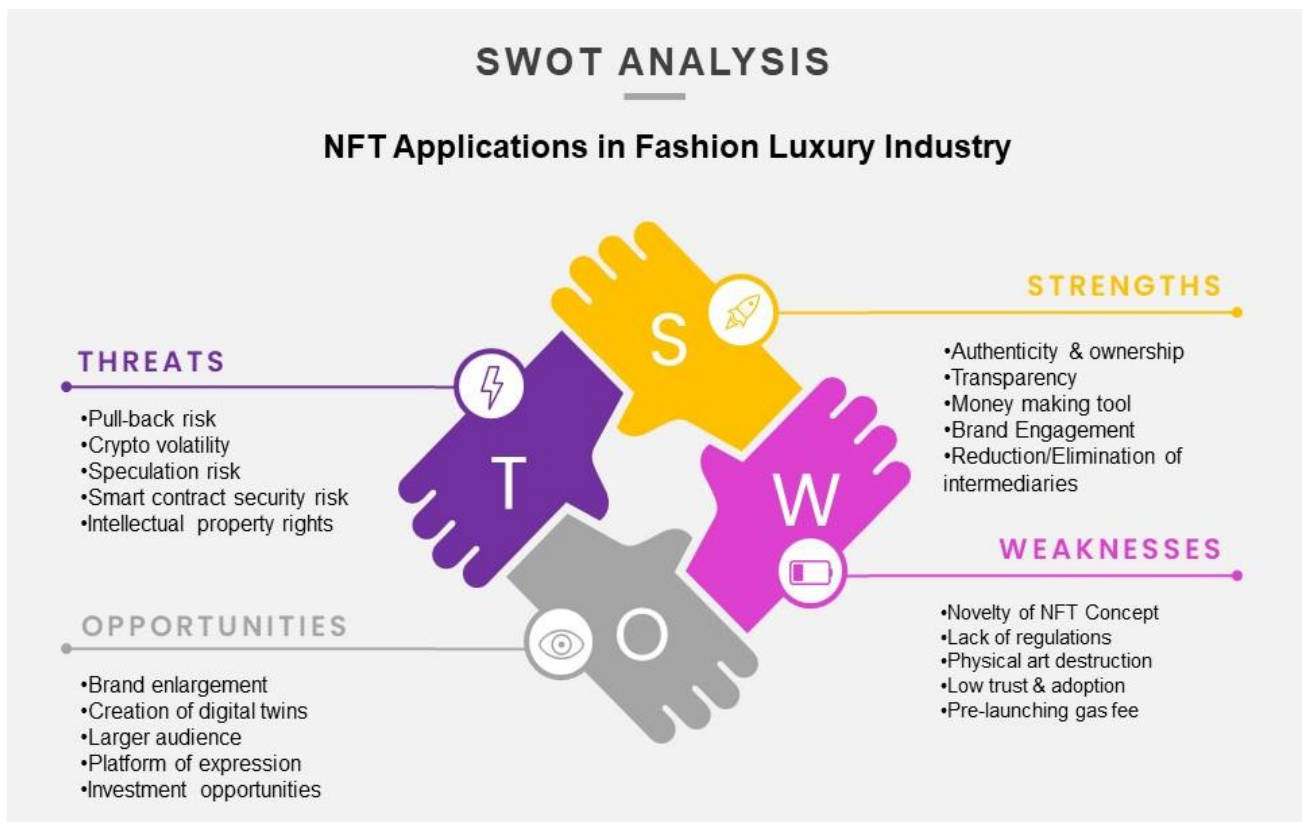


Fig. 5.1. SWOT analysis of NFT intersection with luxury fashion industry

## **Strengths:**

- **Authenticity & Ownership:** Due to the main characteristic of non-fungible tokens, Scarcity, the use of NFTs has been considered viable for the ownership purposes. As per numerous applications currently this blockchain technology is considered to be trustworthy since the token created can't be replaced or exchanged. Some companies in fashion luxury are considering NFTs to create digital passports for valuable accessories like wristwatch to prove the ownership and to trace the ownership record for future sales.
- **Transparency:** Nonfungible tokens are solely based on the blockchain platform which is quite reliable and transparent. One of the main use of this platform is for the cryptocurrency to be transparent and permissionless. Fashion brands are making it quite accessible to buy and sell digital garments on the transparent platform in exchange of the transaction which doesn't require any permission and is recorded on the public platform.
- **Money Making tool :**NFT stories are taking rounds on the internet because of the number of sales increasing frequently along with a high transaction amount. As seen in the case study #, 12-year-old kid made thousands of pounds overnight for trading the weird whales collection proving this NFT technology has so much potential to create wealth.
- **Brand Engagement:** One of the main reason as seen in the previous case studies, was the brand engagement. Every other brand in the market is trying to adopt this concept and introduce the NFTs to enhance the brand engagement. Brands are getting into the news for their digital innovation and customers are happy to be part of this crypto circle enjoying multiple benefits provided by the brands. Louis Vuitton used the similar strategy by introducing Louis: The Game to penetrate in Gen Z segment.
- **Reduction/Elimination of Intermediaries:** Blockchain technology reduces the third parties involvement and makes the NFT minting and selling very easy for both the parties. Through this technical advancement, it has been easier for

artists to sell out their artwork without any intermediaries and using a transparent platform to process the transaction.

## **Weaknesses**

- **Novelty of NFT Concept:** Even though NFT has taken a lot to attention in past one and a half year but still NFT concept is naïve to many brands. People are still left with many question unanswered regarding investment and the true worth of NFT.
- **Lack of regulations:** There is no legal description of NFT so far and hence people are quite skeptical about it. Different countries are categorizing these tokens with different approaches therefore there is a need of international forum to regularize and make relevant policies for the NFTs. Compliance can only be verified if there are perfect set of rules and regulations.
- **Physical art destruction:** Among different applications, one was presented regarding the burning of an art (case study #) which resulted into the high value generation. It's not something very appreciated to destroy the physical art and shift the value to only digital asset. A physical feel of an art can never be justified with the digital ownership. Owning a digital authenticity can be a source of higher cryptocurrency generation but will fail to sustain the physical art. Many artists are still striving to adopt digital platform to chase this new trend.
- **Low trust & adoption :** Apart from the unique and reliable attributes of non-fungible token, still there is a mistrust factor residing in minds of entrepreneurs since there is no guarantee about the future of this concept. There are mixed reviews about the future of NFTs because of the volatility factor and speculative nature.
- **Pre-launching gas fee:** NFT differs from ordinary online platform in such a way that it requires to invest some amount of gas fee to mint that token. Big brands can easily spend good chunk of money on minting but when it comes to an individual artist sometimes it can be a barrier for the artwork to be published. Layman can't just simply post it on the internet, but it will require to pay gas fee for the energy consumption.

## Opportunities

- **Brand enlargement:** NFT provides the opportunities for the brand enlargement and enhancement in various dimensions. As seen previously in the case studies established fashion luxury brands have gotten the opportunity to expand their domains from fashion to either art or gaming.
- **Creation of digital twins:** Most of the case studies included in this report are examples of digital twin creation. Almost all the mentioned companies working in physical garments have been able to produce the digital twin of the same. Hence it gives a chance for value generation through the digital twins on the blockchain platform.
- **Larger audience:** Digitalization of physical assets have been a source of approaching a larger audience via internet. Examples of case study Clothia tried to bridge the gap between designers and customers. End user could easily get the updated designs and get in touch with the designer for more recommendations etc.
- **Platform of expression:** Along with the established brands, blockchain platform provides the individual artists and new entrants with a platform where they can easily express their obsession with art and cash it well. Having low marketing skills, it's very hard to reach the targeted segment on the internet due to high saturation. Blockchain, being an authenticate platform, is feasible for the expression of art and get required attention.
- **Investment opportunities:** People have seen the recent boom of NFTs and are ready to be part of this new tech toy. The NFTs being sold for high amount of cryptocurrency is the reason for high investment options. People are investing millions of dollars to collect the remarkable art, music, assets etc. which they think will increase the value with the passage of time.

## Threats

- **Pull-back risk:** With the greater benefits comes great risks, which includes the Pull-back risk which is very famous in the crypto world. The high price drop in the value is referred to as Pull-back which is normal to observe. This can be observed in the crypto currency and the value of NFT itself. Analysis can predict the pull-back duration following the historical trend but no one guarantees the actual situation which brings the risk factor.
- **Crypto volatility:** One of the main reason for the people being skeptical for this NFT investment is the crypto volatility. Crypto is not governed by a single firm or organization but is influenced by the market trend. The whole concept is revolving around the demand versus supply in the marketplace which can either make you rich or poor overnight.
- **Speculation risk :** Since there are no criteria's set to decide the price for an NFT, it depends upon the nature of NFT, it's use and how people perceive it to be. Value for an art is decided regarding how much a buyer will be willing to pay for it. As seen in the case study # Jack Dorsey's tweet was sold for millions of dollars, which was the first time someone intended to sell the tweet and there was no criteria to judge the price.
- **Smart contract security risk:** One needs to ensure the smart contract security before the trading of an NFT. Although blockchain is a trusted platform but still there are some loopholes to be figured out. There has been a similar incident, where hackers attacked the Decentralized finance platform PoliNetwork stealing a huge lump of cryptocurrency which is the result of poor smart contract security.
- **Intellectual property rights:** Another point of ponder is to consider the intellectual property rights. It refers to the owners transferring the rights to the buyers, but it needs to be ensured before the purchase if that person is the actual owner of that NFT. Buying an NFT means the rights to use, not the intellectual property rights.



## 5.2. Future of NFT in fashion Luxury

Non-Fungible tokens have made their place into the market sooner than expected therefore, future of this technology is crucial to consider. What holds for fashion luxury brands into this high-hyped concept? To understand the futuristic possibilities, we have to consider different aspects where luxury fashion is pointing out. Some of the companies consider it a risky gamble and some consider it an outstanding opportunity to invest and grow further. Due to the volatility of crypto world, sceptics are not ready to go with the flow without seeing a future trend or analysis. Even though, there are some obstacles studied already in weakness & threats section of SWOT analysis of NFTs in fashion luxury (section#), still premium fashion luxury is quite optimistic about the future privileges that blockchain is going to introduce for brands as well as end-users. Looking at the brighter side, this technology is going to revolutionize the current outlook of life and how we perceive things. Some of the important aspects to be considered by fashion luxury industry for the implementation of non-fungible tokens are:

- **Sustainability:** Businesses following the sustainability trends are going to be the market leaders in the coming future. Sustainability aims at the current usage of resources and planning accordingly for the future. Since the Gen Z is more enthusiast about social media and virtual clothing etc., it's a wonderful opportunity to make use of the blockchain technology and produce goods which don't require fabric, plants to manufacture, transportation to deliver and ultimately no intermediaries to trade. Blockchain will enable to produce ethically and sustainably. Brands will be able to reduce pollution and customers will be able to track & trace the record of a product from production to the repair etc.
- **Transparency:** Internet, being a crowded platform mix of original and counterfeit items as well as sellers, has resulted into the worldly acceptance of non-fungible tokens because of its authenticity and transparency. Transparency can be a source of authenticity as well as a proof the ownership. Unhackable and reliable platform of blockchain will enable customers to list their transaction in an accessible and open-to-all platform. Buyers will no longer

need permission for the transactions and would get the purchased token on spot. This is going to eliminate the discrepancies to a greater extent.

- **Exclusivity:** Among the characteristics of fashion and luxury industry, exclusivity tops the list. NFT owners are concerned with their social status and to endorse it by the purchase of unique art and collectibles. Millennials can flex the ownership of one-of-a-kind collectibles bought for the exchange of good chunk of cryptocurrency. Showcasing a rare collectible or CryptoPunk on twitter also represents the exclusivity and sign of wealth.
- **Creation & Design:** Like other perks of blockchain technology, it's also modifying the designing concept and the way fashion was presented. The coming future will be a better place for artists and designers to create virtual art and fashion in a more detailed way and ultimately reaching out to the fans in no time.
- **Advisory & Utility:** Along with the virtual stores, the purchase of NFT includes some other benefits like interacting with the designers or artists. Which develops an interaction platform between customers & designers to get their virtual garments customized and receive recommendations about the utility. It seems to reduce the distance between end-user and creators to establish customer-centric approach in order to fulfill the market needs.
- **Audience selection:** One of the main goals behind application of NFTs in fashion and luxury brand was to approach the customers in an effective way. Customers were able to learn this digital way of shopping and interaction. Early adoption of the luxury brands have already made them possible to attract larger audience and is expected to grow exponentially. Luxury brands are making headlines with this technological advancement and people are anxious to know the roadmap.
- **Marketplace:** There are multiple platforms available in the market like OpenSea, Foundation, Nifty gateway, Basic.Space etc, which enable the transaction of NFTs easier. Brands will get the benefit of these marketplaces to mint NFTs and to save time and efforts required for the traditional marketing.

- **Revenue & royalties:** No doubt the non-fungible tokens are booming very effectively due to the hype, but they also possess potential for high revenues due to the elimination of third parties. In the near future, companies will not be looking for intermediaries to promote or to sell their products but instead blockchain will serve all the needs efficiently and effectively.
- **Metaverse:** Demand for digital clothing by fashion and luxury brands is expected to grow massively and can reach up to \$50 billion by the year 2030 as expected by the Morgan Stanley -a global leader in the investment and finance.
- **Storytelling:** Since the fashion luxury is coming to the virtual world, it will also be a source of storytelling in the future. People spending thousands and millions of dollars for an artwork would not just be an NFT but there would be a story behind it and people are expecting it to be more interesting in the future. Like the buyer of Jack Dorsey's tweet endorsed his purchase by comparing it with buying the painting of Mona Lisa. Collectibles may not have a physical value, but they hold a great potential to generate ownership and value by the passage of time. Fashion is also considered to be collectible, it's just the luxury brands need to focus how and where the collectible mindset of their fans exist.

## Chapter 6

### 6. Conclusion

With the evolution of digital tools, we have seen many technologies getting matured with the passage of time revolutionizing the conventional outlook. Thanks to the advent of blockchain technology, it has been easier to interact digitally due to its authenticity and transparency. This technology was primarily implemented for the digital transactions which led the foundation of digital currency i.e. cryptocurrency. Cryptocurrency has the ability to perform transactions centrally on a public platform without needing any permission to proceed unlike traditional banking system. Once the crypto successfully took over the digital transactions, it provided many other applications in different domains. Considering the fact, crypto is a fungible token, on the contrary a new concept of non-fungible token (NFT) was introduced which can't be replaced or exchanged and is being used as a proof of ownership and authenticity of digital or physical items. Non-fungible tokens were introduced in 2014 but recently got an eye-catching attention especially during the pandemic. Skyrocketed sales of NFTs (\$10.7 billion USD was recorded in the 3<sup>rd</sup> quarter of 2021) made people excited as well as perplexed. Within no time, NFs' implementation penetrated into various domains i.e. artwork, music, memes, gaming, collectibles, identity purpose etc. Different digital assets were sold for jaw-dropping prices due to the speculative nature, which includes the sale of CEO twitter's tweet, Beeple's collage art of 5000 pictures, weird whales collection and so on.

Pertaining to the craze of non-fungible tokens in different sectors, luxury fashion industry was compelled to duly jump into this crypto circle. Worldwide prominent brands like Gucci, D&G, LVMH, Burberry etc., took active participation to this race of digital headway. Multiple collaborations were observed with the span of time, mostly fashion luxury brands have stepped into gaming, artwork, and virtual

fashion. Fashion brands have introduced NFTs as customized characters in games, 3D galleries, virtual garments, in-game items, and tributary videos as artwork which resulted into brand awareness especially among Gen Z. People have been enthusiastic regarding the virtual collections by different brands since it allows them to interact, customize and play with the link-minded people in the virtual world. Exclusivity is Another perspective for adoption of this naïve concept was to stay updated with the technological advancement and support the community. In many cases, the proceeds from the sales of NFTs were used for the charity specially focusing the victims of Covid-19 pandemic. Following this trend luxury brands are warmly welcoming the future, NFT holds for them. NFTs are expected to hit the jackpot in virtual world creating many opportunities for designers, artists, creators, and tech gurus. Due to the massive influence of social media, people are more concerned about their digital profile than physical appearance hence this new technology is also helping fashion brands to explore the digital clothing while uprooting the physical production of garments eventually contributing to the sustainable development.

Considering the two sides of the same coin, every technology has its downsides. Due to its speculative nature, people are still ambiguous about the future of NFTs. There has been mixed reviews and comments by the experts discussing about the trend of NFT- either it can be a bubble which will burst in near future making people miserable or the future of fashion luxury industry. On the contrary, the launch of metaverse by Mark Zuckerberg endorses that virtual is the future. That project has so much to tell and predict about the people and the way of interaction in the virtual world. Virtual reality and augmented reality is going to further make it a unique experience where fashion luxury will have the opportunity to excel the virtual fashion leveraging the non-fungible tokens.

## Lists of Abbreviations

Abbreviation	Description
3D	Three Dimension
AI	Artificial Intelligence
AR	Augmented Reality
CEO	Chief Executive Officer
CSS	Cascading Style Sheet
D&G	Dolce and Gabbana
DeFi	Decentralized Finance
DJ	Disc Jockey
DLT	Digital ledger technology
E.g	Example
ERC	Ethereum request for comment
etc	Et Cetera
ETH	Ethereum
Gen Z.	Generation Z (born between 1997-2012)
GIFs	Graphics interchange formats
HTML	Hypertext Markup Language
i.e.	That is
ID	Identity
NFT	Non-fungible token
NYFW	New York Fashion Week
QR	Quick Response
SR	Super Rare
SSR	Super Super Rare
TB	Thomas Burberry
USD	United States Dollar
VR	Virtual Reality

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