

A Work Project, presented as part of the requirements for the Award of a Master's degree in  
International Management from the Nova School of Business and Economics.

USER ACCEPTANCE OF NON-FUNGIBLE TOKENS IN THE FASHION INDUSTRY:  
AN EXTENDED TECHNOLOGY ACCEPTANCE MODEL

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## Abstract:

This research aims at investigating factors influencing user acceptance of NFTs within the fashion industry based on the extended Technological Acceptance Model. Furthermore, consumer perception of fashion NFTs is explored. The study uses a quantitative research method using an online questionnaire with a semantic differential scale. Based on 203 responses it was found that social norm, self-efficacy, perceived curiosity, and perceived pleasure are positively impacting perceived usefulness and ease of use, which in turn are positively influencing attitude towards technology and the consumer intention of interacting with fashion NFTs and value perception reflecting a negative influence on behavior intention.

**Keywords:** Non-Fungible Tokens, NFTs, Blockchain, TAM, Technology Acceptance Model, Fashion, User Acceptance

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## 1. Introduction

In recent years the use of blockchain technology has seen a rise in popularity, with companies and institutions investigating the technology for its mainstream adoption. Blockchain can be described as a distributed ledger technology, an innovative type of data storage, which comprises an ever-growing list of chronologically traceable transactions called “blocks” which are cryptographically linked together to secure the data. Due to the main characteristics and advantages of blockchain – immutability, enhanced security, and decentralization – the technology gained popularity for various players (companies, governments, international organizations etc.) with the aim to explore solutions for a broad spectrum of issues. At the present the application of blockchain technology extends itself beyond its original use within the financial area, including the utilization of the technology in logistics and supply chain tracking’s, to secure personal information (identity authentication, insurance, or medical information etc.) or artist royalties (Sun, et al., 2018).

Blockchain as such is the foundation and underlying technology for the creation and usage of Non-Fungible Tokens (in the following abbreviated by NFT) which are the main focus of this paper. A more detailed explanation of NFTs will be given in section two. Generally, NFTs were first created in 2014 and have since then gained increased public attention due to its enormous market growth mainly through their use case of digital art, as collectibles and within the gaming industry (Valeonti, et al., 2021). Solely from 2018 to 2020 the market capitalization of NFTs grew nearly ten-fold from 41 million US dollars to roughly over 338 million US dollars, representing a CAGR of approximately 187% (Statista, 2020). Even though, the former mentioned use cases for NFTs make up the greatest share of their application, NFTs could also serve other purposes such as using the digital tokens for authenticating academic credentials, securing medical records or intellectual property and patents, or using NFTs and blockchain technology to improve the traceability of rare and

luxurious goods such as high brand fashion garments or create new digital experiences.

The fashion industry has been facing major disruptions over the last years, having to adapt to shifts in consumer behavior and priorities, digitalization, and industry challenges such as supply-chain disruptions and a fast-growing number of competitors. These changes were accelerated by the recent COVID-19 pandemic with the industry facing a 20% decline in revenues in 2019 and 2020. NFTs represent a great opportunity for fashion brands to engage with their customers, enhance the digital customer relationship, personalize their digital experience, and generate new revenue streams through this innovative digital approach (Business of Fashion; McKinsey, 2021). First movers already adopting the technology, Dolce & Gabbana for example was the first fashion house releasing a NFT collection which consisted of 9 exclusive NFTs, from which 5 were digital twins, meaning they were accompanied by the respective physical item and 4 strictly digital articles. Multiple other brands such as Nike, Adidas, Burberry or TagHeuer are including NFTs in their marketing efforts and have released their own digital collections to create an exclusive interactive shopping experience.

The objective of this paper is to investigate the perceptions of the public towards NFTs within the fashion industry and their acceptance as measured by the extended Technology Acceptance Model (TAM) (Marangunic and Granic, 2015). The second section of this paper will establish a base understanding of the technology acceptance model, review existing literature of NFTs and give an overview of the fashion industry. Subsequently, in section three the methodology used to address the proposed research questions is explained followed by the analysis and discussion in section four. Finally, the evidence of this thesis as well as recommendations for practitioners will be presented in the last section.

## 2. Literature Review

As Blockchain and NFTs represent a very recent technological development there are not many studies and research papers available at the moment. Most of the information with

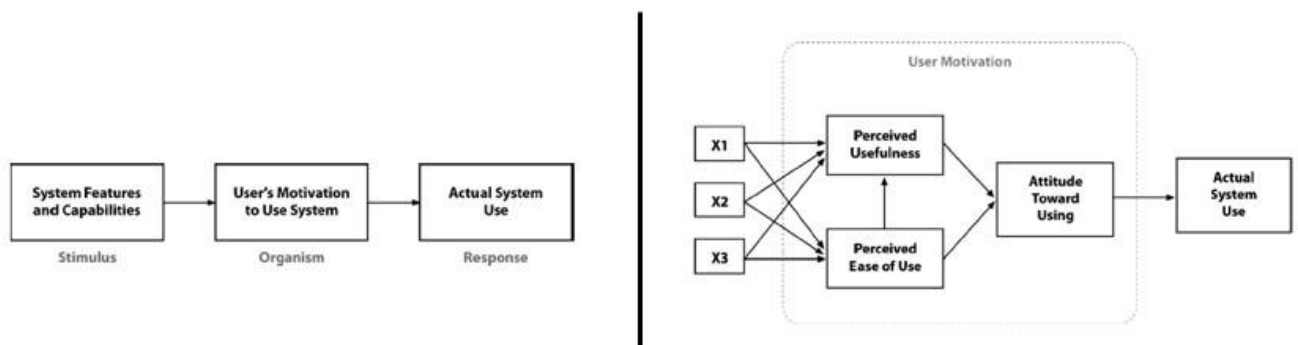
regards to NFTs is collected and distributed through non-academic sources such as blog entries or social media. Moreover, there is no interdisciplinary research between the TAM, fashion industry and NFTs, which is why the following literature section will look at all three elements individually to build a foundation for the analysis in this thesis. Lastly, the research questions for this thesis will be presented.

*Side note: DLT/Blockchain technology is emerging and actively developing, terminology and explicit definitions are not fully established and may change. Definitions used in the following refer to the applied definitions at the point of writing (September – December 2022).*

## 2.1 Technology Acceptance Model

Various technologies, especially information and communication technologies, are increasingly intertwined within the private and professional lives of their users. This has resulted in many theories and frameworks trying to predict and explain the technology acceptance, rejection as well as its degree of effectiveness. Still, the Technology Acceptance Model (TAM) developed and published by Fred Davis in 1989 has evolved into a crucial paradigm for comprehending what factors indicate how people will react to new technologies (Marangunic and Granic, 2015).

Originally Fred Davis proposed the conceptual model for technology acceptance derived by research in the field of psychology, suggesting an external stimulus made up of the technology’s features and capabilities having a direct effect on user motivation which then determines how new technology will actually be used. Further, he refined his model and



**Figure 1:** Conceptual model for technology acceptance (left); Original TAM by Davis (1989) (right) (Marangunic and Granic, 2015)

introduced the model described as the original TAM which is used to illustrate the reciprocal relationship between “external variables” that influence a user’s acceptance of a technology and elements that impact actual behavior and anticipates a correlation between external factors and both perceived usefulness and perceived usability (Chuttur, 2009).

This original TAM model was later improved by Davis himself, thereby developing the original Technology Acceptance Model. Eventually the TAM 2 proposed by Venkatesh and Davis for a higher reliability (Lai, 2017). TAM 2 (Figure 2) incorporated factors which aim to describe variables influencing the perceived usefulness. For instance, “subjective norm” describes the impact of other with regards to a user’s willingness to utilize the technology at hand. As moderating elements of the “subjective norm”, experience and voluntariness were added (Legris et al., 2003).

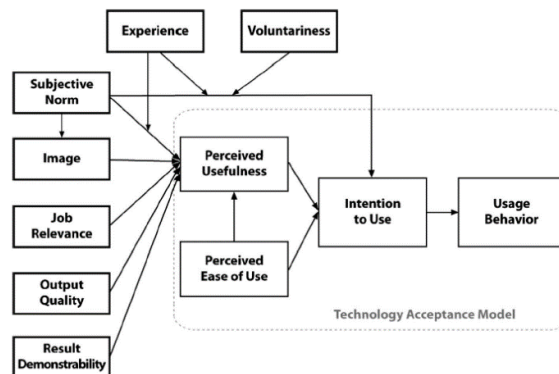


Figure 2:TAM 2 (Venkatesh and Davis, 2000)(Marangunic and Granic, 2015)

TAM 2 forms the basis for extended TAM models, the modifications depend on the respective research areas; usually alterations are carried within four major categories: (1) external factors (e.g., image, output quality, value perception/price), (2) factors from other theories (e.g., self-efficacy, trustworthiness, expectations), (3) contextual factors (e.g., gender, cultural background) and (4) usage measures (of actual usage in % etc.) (Appendix 2) (King and He, 2006).

Despite ongoing advancements in the discovery of new factors that have a major impact on the core variables of TAM, there are still a lot of unknown areas that could support and

increase its predictive validity. However, the ongoing development of new technologies, as well as an increasing number and diversity of users, offers up new research areas that might improve knowledge of technology adoption and contribute to prospective TAM upgrades that could further improve the model's predictive validity (Marangunic and Granic, 2015).

The application of TAM on blockchain applications or blockchain core features there is very limited research, with the existing papers covering very fragmented scopes of studies with a missing overall systematic approach. The same applies to existing TAM research within the fashion industry.

## 2.2 Fashion Industry

The desire for fashionable clothing and accessories is not a trend or a new phenomenon, it rather was expressed in various manifestations and interpretations depending on the geographic location as well as point in time. However, the industry in its modern form as we know it, represented by fashion brands or firms, started in the middle of the 19<sup>th</sup> century with Charles Frederick Worth who marked his designs by sewing labels into his fashion garments (Milbank, 1985). Even though the passion for fashion was drawn from different motivators over the centuries, it is anticipated that fashion is linked to the perspective and judgment of others with humankind longing for admiration and recognition. Fashion fulfills human desires by allowing consumers to express themselves, show their affiliation to a certain social construct or allowing them to stand out from the masses and openly position themselves as different to the mainstream consumer (Palgrave Advances in Luxury, 2020).

From an economic perspective GDP per capita has never been higher on a global scale (World Bank, 2021), with the highest number in high net-worth individuals ever in human history and a rising middle and upper-middle class with the latter groups spending between 24% and 21% of the average household budget on food and clothing (OECD, 2019), with fashion being one of the most dynamic industries at the core of the fast moving consumer

goods markets. In context of this research the expression fashion industry includes apparel, footwear and accessories acquired via digital channels in B2C transactions - this market segment was chosen due to its relevance in face of the research. The channels include purchases via (desktop) computers and mobile devices.

The overall revenue generated by the digital fashion market is expected to reach €885.50 billion by the end of 2022 and is rising steadily with an expected annual growth of 11.45% (CAGR 2022-2025) leading to a forecasted market volume of €1,183 billion by 2025. This revenue is pushed by China (€279,10 billion), the United States (€185,70 billion), the United Kingdom (€54,14 billion), Japan (€48,63 billion) and Germany (€34,39 billion) (Statista, 2022a).

The global leading players within the apparel and accessories segment are Inditex (Brands: Zara, Pull & Bear, Massimo Dutti etc.) with revenues of nearly €28 billion, H&M accounting for roughly €18.5 billion and GAP generating around €15.5 billion revenues, followed by Fast Retailing, VF Corporation, PVH, C&A, Victoria's Secret, Primark, and Bestseller (Statista, 2021). The top five of the largest footwear brands are Nike with a revenue of \$44.4 billion (Statista, 2022b) and Adidas amounting for €11 billion (Statista, 2022c) followed by VF Corporation, Deckers Brands and Puma (Statista, 2021).

Traditionally fashion retailers used their ability to forecast consumer demand and fashion trends long before the actual time of consumption in order to compete on the market, this style of competition changed in recent years by fashion retailers increasing speed to market. This adoption of quick fashion led to an unplanned production process on a seasonal basis and a shorter time gap between design and actual consumption (Guercini, 2001). This shift over 20 years ago changed the dynamics of the fashion industry forcing retailers and eventually the consumer to push for low-cost products, flexibility in design and quality, leading to an increased number of "fashion seasons" and modified characteristics in the supply chain (Doyle

et al., 2006).

Nowadays, the fashion industry is facing significant changes and challenges as a result of yet another deep transformation in consumer lifestyles – GenZ emphasizing sustainability and circular economy – whilst facing an increase of a general demand for lower prices as antipole to sustainability demands and the rise of digital economy as well as a fast-growing number of new competitors due to e-commerce (Gazzola et.al, 2020).

Even though brands already started implementing multi-channel distribution and marketing approaches, the COVID-19 pandemic can be defined as trigger for the definitive shift within the retail and fashion industry towards digital adoption and innovation and thereby setting the space for fashion brands to implement Non-Fungible Tokens among other things (Business of Fashion; McKinsey, 2021). Stock market performance mirrored the relative strength of digital channels as well. While the apparel sector witnessed net value reductions, digital players and adopters fared better than their physical counterparts showing higher resilience in face of the pandemic (Business of Fashion; McKinsey, 2021). New digital options are leading to innovative marketing, design, and income sources in the fashion sector e.g., Ralph Lauren offering virtual branded apparel, Louis Vuitton creating in-game apparel for the online game League of Legends or Nike creating wearables for the Metaverse. More and more companies are investing to enhance digital customer journeys and creating omnichannel ecosystems to meet customer demands of connecting digital and physical experiences (Business of Fashion; McKinsey, 2021).

### 2.3 Technology Background

Non-Fungible Tokens represent an emerging technology product within the realms of the prevailing blockchain technology and have seen a rise in attention from both academic as well as industrial players since their first appearance in 2014. To understand the popularity of NFTs and therefrom deriving business opportunities, it is necessary to analyze how Non-Fungible

Tokens are working and what their main characteristics are. Due to the limited constraints of this thesis and the complicated nature of the underlying blockchain technology a simplified and basic explanatory approach is chosen to create a general understanding of NFTs.

### 2.3.1 Blockchain Technology

Distributed Ledger Technologies (abbreviated DLT), with blockchain being one of the most known DLTs, are innovative and special forms of electronic data processing and storage. Unlike a centrally maintained database, Distributed Ledgers are decentralized databases meaning the network does not require a central instance to produce new database entries. New records can be uploaded at any time by the participants themselves. A subsequent updating process ensures that all participants always have the latest version of the database. DLTs are classified as either “permissioned” or “permissionless” based on the access capabilities of the members. The latter is available to anyone – e.g., Blockchain in the Bitcoin network – access to the former is controlled. The selection of the consensus procedure is closely linked to the selection of the circle of authorized participants (open or restricted circle of participants). Consensus is used to create a fault-tolerant system by including “voting nodes” (the given participants) that must agree on a proposed transaction or a given conclusion (e.g., result of an execution of a smart contract). When all voting nodes reach an agreement – mainly by simple majority – it is regarded final and cannot be revoked (Deshpande et al., 2017).

There are various types of implementations for blockchain solutions, the technology enabling NFTs, are differing in functionalities such as transaction speed, accessibility, efficiency, and interoperability with other blockchain solutions (Bambara and Allen, 2018). The most popular blockchain platforms for the use and creation of NFTs are Ethereum, Polygon and Solana, with Ethereum being the most popular solution. Among other things the popularity of Ethereum can be explained by its smart contract capability, which represented a revolutionary development. Because of this capability, Ethereum can be used for trading,

securing information, decentralizing, or codifying almost anything and was therefore the first blockchain to enable DApps (decentralized applications) such as NFTs and DeFi (decentralized finance) leading to its rise in popularity (Bambara and Allen, 2018); (Christodoulou et al., 2022).

### 2.3.2 NFTs

The crucial difference between fungible and non-fungible lies in the interchangeability of fungible tokens i.e., one fungible token can be replaced by the same kind of fungible token without any gain or loss (e.g., one Bitcoin for another Bitcoin) as well as their divisibility. NFTs, however, were created for the purpose of representing ownership over digital or physical assets and cannot be substituted by another since each NFT is unique with their individual attached metadata and cannot be divided. The digitized representations of assets are stored in a decentralized manner on a blockchain and are assigned a specific function or value (Wang et al., 2021); (Regner et al., 2019). Since NFTs are decentralized applications, they benefit for the properties of their underlying public ledgers (blockchains), these key characteristics can be described as: verifiability, transparency, tamper-resistant, constant availability (Wang et al., 2021).

As previously mentioned, smart contracts are needed to mint (deploy/create) NFTs. Smart contracts can be interpreted as “automated digital contracts” with predefined transaction details embedded in a computer code and which are automatically completed by the program upon recognition of a certain input (Deshpande et al., 2017). Leading to the fact that NFTs are essentially nothing more than a code to which a buyer has attributed "worth". To this effect the question of scarcity arises since it is one of the principal applications of NFTs in order to assign value to code-built digital things with some NFTs fetching millions of dollars in auctions. This scarcity is established through unique signatures imprinted on the given blockchain, also known as cryptographic hash-function, which allows to authenticate the NFT

(Cohan, 2021).

Even though Blockchain technology has immense potential to design the future of internet systems, the technology still faces several challenges which need to be discussed. In the following the most prominent issues with regards to NFTs are highlighted. Due to the decentralized nature of DLTs general governance issues such as data protection & privacy, legal status of contracts or individual privacy are not regulated which can expose users to dangers like fraud (Wang et al., 2021). Critics argue that that purchasers of an NFT are not necessarily owning the original objects; in fact, there are no ways to guarantee that the file uploaded to the ledger is not replicated or utilized by anyone else already or in the future. This origination problem is common in applications of blockchain technology (such as smart contracts), with the NFT space not posing an exception: artwork can be created as an NFT without proving that they are the original creator of the work; representing the obvious self-evident risk that fraudulent actors may upload NFTs to auction marketplaces, acting as the original owners to derive wealth (Cohan, 2021).

Moreover, the rather low adoption rate of the technology as well as the missing mainstream information about this technology could represent a usage barrier for potential customers since certain prerequisites (crypto wallets, cryptocurrencies) are needed when acquiring an NFT (Glomann et al., 2019). The highly fragmented blockchain ecosystem potentially poses as a challenge due to potential users having problems accessing applications running on different blockchains since an interoperability between different blockchains is usually not anticipated by the existing standards and protocols – thereby restricting users in e.g., transmitting tokens from one user to the other, using tokens on different platforms if the underlying blockchain solution is not congruent or invoking and executing smart contracts which are foreseen for only one specific blockchain (Schulte et al., 2019). Lastly, the current existent consensus algorithms (proof-of-work & proof-of-stake) are both characterized with

major disadvantages, the former with high electricity requirements and the latter in distribution of voting power e.g., “the rich getting richer” (Wang et al., 2018).

#### 2.4 NFTs – use cases in Fashion

At the moment, NFTs are mostly used within the art and gaming industry using them to tokenize digital collectibles including digital art, music, online art, in-game objects as well as music. However, NFTs are not limited to these use cases since they can also be used for licensing and certifications, ticketing, e-sports, and real-estate or redefining supply chains in various industries (Osivand, 2021). Particularly interesting is the use of NFTs within the fashion industry, which gained popularity in the course of the COVID-19 pandemic.

According to the Vogue Business Index, 17% of the businesses surveyed have some sort of relationship with NFTs in 2021. And, with Morgan Stanley projecting a \$25 billion luxury NFT industry, the number of fashion companies entering the sector is only growing (Vogue Business, 2021).

NFTs can evolve into stand-alone brand components (for example: new goods) portraying an essential role across the sales funnel. Launching a branded NFT collection may increase brand recognition and reach previously untapped target groups (e.g., Gen-Z). NFTs can also persuade consumers to acquire the brand's actual items, resulting in cross-selling opportunities (Colicev, 2022). Nike and Adidas are two major examples of digital fashion firms that have sold numerous real shoes as NFTs and vice versa (McKinsey, 2022). Brands may increase loyalty by increasing perceived ownership of particular brand features, such as the logo or design. Further, NFTs can help to build a brand community that will support the brand. Through the strength of online brand communities, NFTs may become the trigger for the third wave of commerce, similar to how the internet revolutionized commerce and social media provided a two-way communication channel with customers. Discord, Telegram, and Reddit are social media sites in the realms of decentralized applications that are extremely engaging,

decentralized, and anonymous, and where users are spending a growing amount of time. Platforms may be used by brands to improve consumer involvement in NFT communities through organic messaging or creative content (Colicev, 2022).

More and more Fashion brands are embracing blockchain technology and are leveraging the digital scarcity created by this technology and thereby increasing their revenue as well as enhancing their digital customer experience. Fashion NFTs can take numerous forms, including virtual clothes that buyers can wear within virtual surroundings (metaverse, games etc.) digital content with which owners can engage (web3 fashion shows or fashion houses), and digital twins of real physical items (Business of Fashion; McKinsey, 2021).

In the following these main cases are portrayed in more detail.

(1) **Digital Twins** are a virtual representation of real-world physical objects; these twins create persistent digital properties elevating physical merchandise to a verifiable representation in social and immersive digital spaces (metaverse, web3 applications, online-games). (Fig. 3 and 4)



Digital Twin

Physical Item



Physical Item

Digital Twin

*Figure 3: Adidas Originals into the Metaverse ©Adidas*

*Figure 4: Genesis Collection ©Dolce & Gabbana*



*Figure 5: Wearables by ©Prada and ©Nike*

(2) **Wearables/Virtual clothing** can be seen as a natural extension of applying social media filters; fashion brands are offering NFTs in the form of wearables to create a bridge between the physical and virtual worlds, enabling personal expression in the digital realm by giving the possibility to dress up virtual avatars in web3 applications such as Decentraland or Sandblock. (Fig. 5)

(3) **NFTs as key to exclusive content** (among other things: exclusive online content like access to metaverse fashion shows; access to exclusive communities; pre-sale rights; access to online games et cetera) (Fig. 6 and 7)



*Figure 6: Tommy Hilfiger Metaverse Store*  
©Decentraland



*Figure 7: Metaverse Fashion Week*  
©FashionNetwork.com

## 2.5 Research Questions

Blockchain and NFTs have gained enormous popularity over the last years and companies within many industries are implementing the technology to increase their digital customer relationship or solely to leverage the hype around NFTs which arose during the COVID-19 pandemic. Even though studies and scientific investigations are growing in numbers, NFTs are still a recent phenomenon with an inaccurate future where it remains to be seen whether they will be a short-term or long-term trend. However, NFTs could open new revenue streams and define innovative customer relationship programs and are certainly interesting to investigate. This research aims to understand behavioral intentions based on the extended Technology Acceptance Model. Considering this the following research questions have been developed:

RQ1: How does the extended Technological Acceptance Model apply to consumers' awareness and use of NFTs in the fashion industry?

RQ2: How do consumers perceive and embrace NFTs as part of their digital customer relationship?

### 3. Methodology

Taking into consideration the research questions as well as the chosen research model a quantitative research method was chosen to pursue this study, therefore, a questionnaire was created using the CXM software Qualtrics to collect the necessary data to answer the research questions and test the proposed hypothesis from section 2.1.

The questionnaire was distributed online via various social media platforms (LinkedIn, Instagram, Facebook, Slack) through public posts and private messages within the constraints of the researcher's social network, based on ease of access and the given time constraint. The survey consists of 35 statements/questions, covering 9 factors – see Appendix 1 for the complete set. The factors were built based on the extended Technological Acceptance Model aimed at investigating the variables influencing the acceptance of NFTs within the fashion industry. The corresponding statements to each factor were chosen and modified by the researcher in the style of previous TAM research studies.

The survey included a short introduction about NFTs and the Metaverse as well as a brief overview of the top three NFT use cases within the fashion industry accompanied by illustrations to give participants a baseline understanding of the research subject.

The statements covering the factors were developed as a semantic differential scale with the bipolar scale ranging from -3 (strongly disagree) to +3 (strongly agree) and the starting point set at 0 (neutral); participants were asked to use a draggable slider show their level of agreement with each statement and were given the opportunity to answer up to one decimal place to increase accuracy.

To date, TAM research has traditionally been conducted with a classical fixed Likert scale, the semantic differential approach has been chosen to increase measurability.

Demographical information - gender, age, and nationality – was collected at the end of the questionnaire (Appendix 25).

In total 237 responses were recorded in Qualtrics, however 31 questionnaires had to be excluded due to incompleteness. After preparing the data set, the data was analyzed using IBM SPSS Statistics 27 and Excel.

### 3.1 Research Hypothesis – Extended Technological Acceptance Model

As mentioned under section 2.1, the initial TAM included two exogenous variables: perceived usefulness (PU) and perceived ease of use (EoU), with both having a direct impact on attitudes towards the use of a new technology and ultimately influencing behavioral intention. To increase the reliability of the model, external elements that influence EU and EoU are incorporated depending on the investigated disciplines, thereby creating an extended TAM. To fulfill the scope of this thesis, the extended TAM using external variables is used as can be seen in Appendix 3; the investigated factors are self-efficacy, perceived curiosity, social norm, perceived pleasure, perceived usefulness, perceived ease of use, value perception, behavioral intention, and attitude towards technology.

Self-Efficacy can be interpreted as an individual's belief or faith in their own capacity to complete a task or reach a goal successfully; usually higher self-efficacy is accompanied by more optimism with regards to the utilization of new technology. Perceived curiosity may be described as an internal motivator to investigate new things or activities, pushing individuals to gain knowledge. Social norm relates to the impact of others on an individual's decision to do or not do something and serves as justification for the given action. Perceived pleasure refers to the level of enjoyment an individual might experience when interacting with a technology. Perceived usefulness describes the extent of an individual's opinion on whether a certain technology will increase their performance. Perceived ease of use can be described as the level of simplicity or the absence of complexity an individual believes to experience

when interacting with a (new) technology. Value perception refers to financial and non-financial factors which potentially motivate individuals to utilize technologies if their expectations are met. Behavioral intention measures the level of willingness to complete a certain behavior and attitude towards technology refers to an individual's acceptance or rejection of a technology.

When considering all these factors, the model suggests that if a user finds a new technology valuable, easy to use and beneficial, they will engage with it favorably and be more likely to use it in the future. For this research, the following hypotheses are proposed.

*Table 1: Research Hypothesis'*

Hypothesis 1	<i>Perceived ease of use positively influences perceived usefulness</i>
Hypothesis 2	<i>Perceived ease of use positively influences attitude towards technology</i>
Hypothesis 3	<i>Perceived usefulness positively influences attitude towards technology</i>
Hypothesis 4	<i>Attitude towards technology positively influences behavioral intention</i>
Hypothesis 5	<i>Self-efficacy positively influences perceived usefulness</i>
Hypothesis 6	<i>Self-efficacy positively influences perceived ease of use</i>
Hypothesis 7	<i>Perceived curiosity positively influences perceived ease of use</i>
Hypothesis 8	<i>Perceived pleasure positively influences perceived usefulness</i>
Hypothesis 9	<i>Perceived pleasure positively influences perceived ease of use</i>
Hypothesis 10	<i>Social norm significantly influences perceived usefulness</i>
Hypothesis 11	<i>Value perception negatively influences attitude towards technology</i>
Hypothesis 12	<i>Value perception negatively influences behavioral intention</i>

#### 4. Analysis and Discussion

In the following chapter the findings from the quantitative data collection will be presented. The data analysis followed similar methods as previous TAM studies and comprises a Cronbach Alpha scale reliability test, a Pearson Correlation, the most common descriptive statistics, and linear regressions to test the proposed hypothesis'. The expression factor refers to the items as presented in the model and consists of multiple variables, the expression variables are representatively used for the statements and questions posed in the

questionnaire. Eventually the conclusions addressing the research questions will be discussed under sub-section 3.3 *Discussion*.

#### 4.1 Demographic Analysis

The 203 valid surveys were filled out by 93 (46%) male, 107 (53%) female and 3 (1%) individuals identifying with other genders and an age range from 20 to 60 with 79.8% of the participants being between 20 and 35 years old; in total the demography includes 32 nationalities, the most originating from Austria (47.3%) and Germany (19.7%) (Appendix 4 to 6).

#### 4.2 Statistical Analysis

In a first step the Cronbach Alpha Test was conducted to measure the internal consistency of the items, meaning exploring how closely related each set of statements for each factor are and to see if the semantic differential scale is reliable. Table 2 shows the Cronbach Alpha Value of each tested factor and for the full variable set. Overall, the survey can be defined as trustworthy with  $\alpha = 0.958$ , with the exception of the Factor “Self-Efficacy” and “Value Perception” proving non-acceptable scales. For the factor “Self-efficacy”, reliability would be given if the variable f1.v04 were deleted; “value perception”, however, does remain unreliable overall and should be refined in further research attempts.

**Table 2:** Cronbach Alpha Scale Reliability

Factor	Cronbach's Alpha Value	# of Items	
f1 Self-Efficacy	0.511	5	Rejected
f2 Perceived Curiosity	0.832	3	Accepted
f3 Social Norm	0.732	4	Accepted
f4 Perceived Pleasure	0.918	5	Accepted
f5 Perceived Usefulness	0.909	4	Accepted
f6 Perceived Ease of Use	0.822	4	Accepted
f7 Value Perception	0.065	3	Rejected
f8 Behavioral Intention	0.919	3	Accepted
f9 Attitude towards Technology	0.906	4	Accepted
Full Variable Set	0.958	35	Accepted

The Pearson correlation was performed to investigate significant correlation between the factors that may affect the technological acceptance of NFTs within the fashion industry.

Table 3 shows existing weak positive, moderate positive and non-significant correlations between factors. The correlation coefficients vary from  $(+1 > r > -1)$ , with the relationship being considered weak when  $0.25 < r < 0.$ ; moderate between  $0.5 < r < 0.7$  and strong when  $r > 0.7$ . Most of the factors are showing moderate and strong signification at  $p < 0.01$  (2-sided), with the exception of “Value Perception” showing no significant correlation with “Self-Efficacy”, “Perceived Curiosity”, “Social Norm”, “Behavioral Intention”. However, “Value Perception” shows a correlation at  $p < 0.05$  (2-sided) with both the factors “Perceived Pleasure” and “Attitude towards Technology”.

**Table 3: Pearson Correlation**

		f1	f2	f3	f4	f5	f6	f7	f8	f9
		Self-Efficacy	Perceived Curiosity	Social Norm	Perceived Pleasure	Perceived Usefulness	Perceived Ease of Use	Value Perception	Behavioral Intention	Attitude towards Technology
f1	Self-Efficacy	1								
f2	Perceived Curiosity	0.698	1							
f3	Social Norm	0.493	0.647	1						
f4	Perceived Pleasure	0.565	0.768	0.791	1					
f5	Perceived Usefulness	0.566	0.714	0.713	0.862	1				
f6	Perceived Ease of Use	0.578	0.461	0.281	0.403	0.396	1			
f7	Value Perception	0.061 <sup>1)</sup>	0.060 <sup>1)</sup>	0.124 <sup>1)</sup>	0.147*	0.200	0.067 <sup>1)</sup>	1		
f8	Behavioral Intention	0.656	0.820	0.734	0.852	0.781	0.442	0.130 <sup>1)</sup>	1	
f9	Attitude towards Technology	0.645	0.788	0.729	0.873	0.813	0.439	0.148*	0.937	1

Correlation is significant at the 0.01 level (2-sided)

\*Correlation is significant at the 0.05 level (2-sided)

<sup>1)</sup> Not significant

**Table 4: Descriptive statistics for factors**

	f1	f2	f3	f4	f5	f6	f7	f8	f9
	Self-Efficacy	Perceived Curiosity	Social Norm	Perceived Pleasure	Perceived Usefulness	Perceived Ease of Use	Value Perception	Behavioral Intention	Attitude towards Technology
#	203	203	203	203	203	203	203	203	203
Mean	0.400	-0.527	-0.535	-0.060	0.236	0.154	0.829	-0.147	-0.142
Standard-Deviation	1.145	1.668	1.363	1.656	1.592	1.294	0.924	1.908	1.712
Kurtosis <sup>1)</sup>	-1.253	-0.712	-0.515	-0.891	-0.569	-0.208	0.879	-1.142	-0.931
Skewness <sup>2)</sup>	-0.216	0.389	0.164	-0.039	-0.459	-0.194	-0.467	0.076	-0.016

<sup>1)</sup>Standard Error: 0.340

<sup>2)</sup>Standard Error: 0.171

The bipolar survey was scaled from -3 (strongly disagree) to 3 (strongly agree) with the descriptive statistics of the factors depicted in Table 4 showing that the mean varied from -0.535 to 0.829 the maximum mean stemming from “Value Perception” and the minimum from “Perceived Curiosity”, the standard deviation ranges from 0.924 to 1.908.

Descriptive statistics were also created for all 35 variables with the mean values varying from -1.428 to 1.737, the maximum mean deriving from variable f1.v03 (I can teach myself using the necessary tools by reading online instructions) showing respectively that most participants indicated agreement with this statement. The lowest mean was found in variable f2.v02 (I keep up to date with NFT releases from fashion brands) displaying the highest number of disagreements with this statement.

**Table 5: Descriptive statistics for variables**

Variable	N	Minimum	Maximum	Mean	Standard Deviation
f1.v01	203	-3.0	-3.0	0.249	2.3154
f1.v02	203	-3.0	-3.0	-0.258	2.3126
f1.v03	203	-3.0	-3.0	1.737	1.4504
f1.v04	203	-3.0	-3.0	-0.923	1.8784
f1.v05	203	-3.0	-3.0	1.193	1.7356
f2.v01	203	-3.0	-3.0	-1.098	1.9529
f2.v02	203	-3.0	-3.0	-1.428	1.8919
f2.v03	203	-3.0	-3.0	0.943	1.9399
f3.v01	203	-3.0	-3.0	-0.261	1.7713
f3.v02	203	-3.0	-3.0	-0.443	1.9545
f3.v03	203	-3.0	-3.0	-0.567	1.9326
f3.v04	203	-3.0	-3.0	-0.870	1.7060
f4.v01	203	-3.0	-3.0	0.258	1.8519
f4.v02	203	-3.0	-3.0	-0.346	1.9206
f4.v03	203	-3.0	-3.0	0.376	1.9260
f4.v04	203	-3.0	-3.0	-0.244	1.9152
f4.v05	203	-3.0	-3.0	-0.342	1.9323
f5.v01	203	-3.0	-3.0	-0.401	1.8370
f5.v02	203	-3.0	-3.0	0.725	1.7508
f5.v03	203	-3.0	-3.0	0.028	1.8448
f5.v04	203	-3.0	-3.0	0.592	1.7481
f6.v01	203	-3.0	-3.0	0.300	1.6792
f6.v02	203	-3.0	-3.0	0.219	1.7543
f6.v03	203	-3.0	-3.0	0.245	1.4964
f6.v04	203	-3.0	-3.0	-0.146	1.4593
f7.v01	203	-3.0	-3.0	1.000	1.4658
f7.v02	203	-3.0	-3.0	0.034	1.8448
f7.v03	203	-3.0	-3.0	1.453	1.3384
f8.v01	203	-3.0	-3.0	0.118	2.0484
f8.v02	203	-3.0	-3.0	-0.264	2.0235
f8.v03	203	-3.0	-3.0	-0.295	2.0998
f9.v01	203	-3.0	-3.0	0.211	1.8612
f9.v02	203	-3.0	-3.0	0.010	1.8687
f9.v03	203	-3.0	-3.0	-0.172	2.0189
f9.v04	203	-3.0	-3.0	-0.619	2.0038

Lastly linear regression models were run to investigate the relationships between the factors and the proposed hypothesis based on the p-value. As depicted in Table 6, hypothesis 1 to 10 and 12 were accepted, indicating strong evidence against the null hypothesis with a p-value of < 0.001 and 0.036 respectively. Hypothesis 11 with a p-value of 0.065 was rejected.

**Table 6: Hypothesis Testing**

<b>Hypothesis</b>	<b>Path Coefficients</b>	<b>Standard Deviation</b>	<b>p-value</b>	<b>R<sup>2</sup></b>	<b>Results</b>
H1	0.487	0.080	<0.001	0.157	Accepted
H2	0.581	0.084	<0.001	0.193	Accepted
H3	0.874	0.044	<0.001	0.661	Accepted
H4	1.044	0.028	<0.001	0.877	Accepted
H5	0.788	0.081	<0.001	0.321	Accepted
H6	0.653	0.065	<0.001	0.334	Accepted
H7	0.358	0.049	<0.001	0.213	Accepted
H8	0.829	0.034	<0.001	0.744	Accepted
H9	0.315	0.050	<0.001	0.162	Accepted
H10	0.832	0.058	<0.001	0.508	Accepted
H11	0.268	0.144	0.065	0.17	Rejected
H12	0.274	0.129	0.036	0.22	Accepted

### 4.3 Discussion

Based on the demographic analysis as depicted in Appendix 7 and 8 general indications from the received responses for each gender and age class can be noticed. The response mean was overall neutral from a gender perspective showing no evidence of a specific gender being more or less interested in NFTs in the fashion industry. However, age classes 31-55 show a slightly higher agreement with the variables, reflecting higher acceptance of NFTs in the fashion industry, whereas the age classes 20-30 and 56-60 indicate slightly less agreement than individuals from other age groups.

Given the statistical analysis it can be concluded that self-efficacy, perceived curiosity, and perceived pleasure are positively influencing ease of use; meaning that knowledge about how and what is needed to use NFTs, as well as desire to investigate this new technology minimizes the degree of difficulty an individual faces when using NFTs within their shopping experience (Appendix 14, 15, 17).

Again, as the model suggests, the analysis proves that ease of use positively influences perceived usefulness, moreover, it can be deduced that self-efficacy, perceived pleasure, and social norm positively influence perceived usefulness. In other words, the more satisfaction and amusement is derived by using NFTs while shopping, or an individual's social environment approves of NFTs the more useful the technology appears to the user (Appendix 9, 13, 16, 18)

Both perceived usefulness and perceived ease of use are positively influencing attitude toward technology which then positively impacts the behavioral intention; these relations confirm the pre-existing relation based on the original TAM (Appendix 10, 11, 12)

Value Perception seems to have a negative impact on behavioral intention but not on the attitude towards technology (Appendix 19, 20). However, it is necessary to acknowledge that the Cronbach Alpha test did not accept the scale for this factor which points out internal inconsistencies. Also, given the overall survey results, it is believed that the participants had no or only limited knowledge about pricing and value of NFTs, thereby not reflecting a correct picture within the sample.

As can be seen in Figure 7 and Appendix 21-24, the variance of the original TAM factors perceived usefulness, ease of use, attitude towards technology and behavioral intention can be explained 75.5%, 34.3%, 67.7% and 87.7% respectively by their predecessors in this extended model. Although the factors are already well explained, more factors, especially for ease of use, could be incorporated in future studies to increase accuracy.

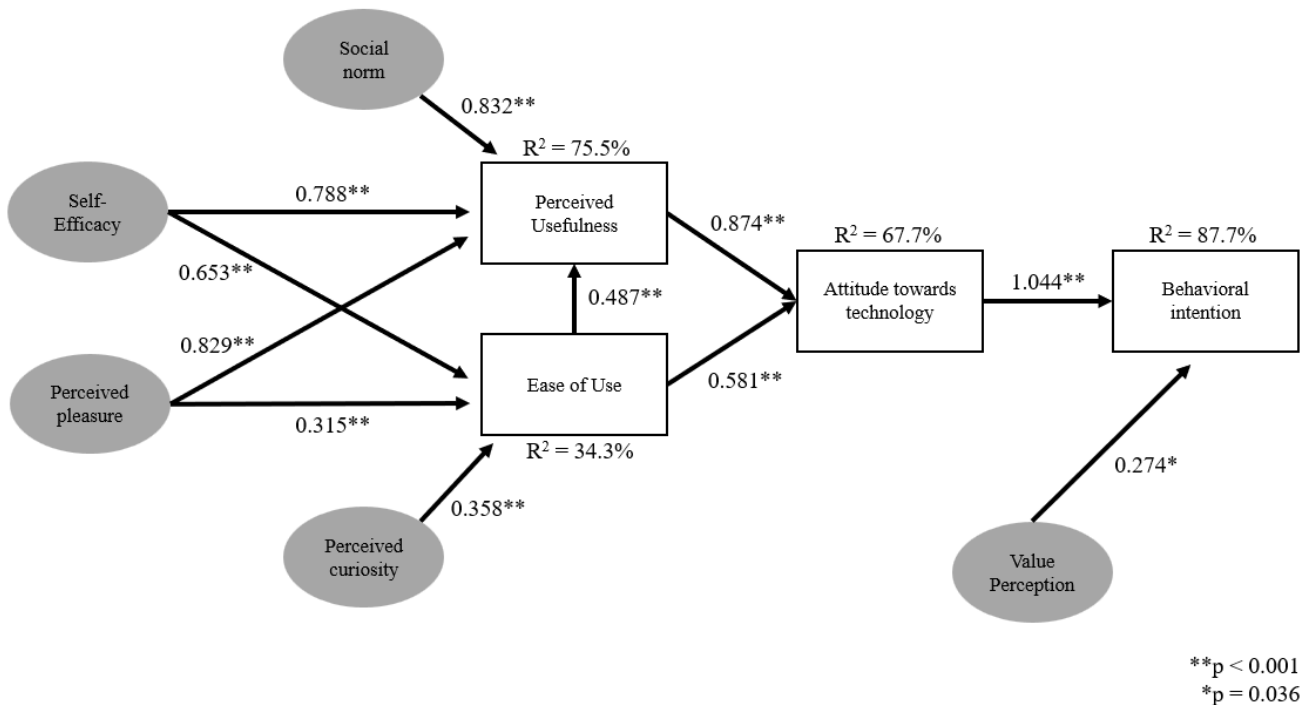


Figure 8: NFTs in the Fashion Industry - Extended TAM

## 5. Conclusions and Recommendations

Despite NFTs representing an opportunity for fashion brands to transform their business model and incorporate digital experience for their customers, user acceptance for this innovative and emerging technology is limited as for the moment. This may be explained by a general absent knowledge of what is necessary to use and buy NFTs within the general public as well as missing mainstream understanding of the technology and its potential use cases.

Nonetheless, this study was able to investigate the most commonly used TAM factors with regards to NFTs in the fashion industry with the goal of understanding the relevant factors for the actual usage, to further support fashion brands in their decision to incorporate this technology in their product portfolio and digital marketing efforts as well as to help developers enhance the necessary technology to meet customer expectations.

The study concludes that users from the age of 31 to 55 are more willing to interact with this technology as part of their digital customer experience with fashion brands. Also, positive influences of self-efficacy, perceived curiosity, and perceived pleasure on ease of use were confirmed. The degree of simplicity (ease of use) as well as self-efficacy, social norm, and perceived pleasure in turn positively impacted perceived usefulness. Subsequently, as the original TAM and TAM 2 model suggest the intention of using NFTs is positively influenced by attitude towards technology which is derived by both perceived usefulness and ease of use; however, it is important to notice that value perception may negatively impact the behavioral intention of NFTs in the fashion industry.

Research limitations which impacted the research are acknowledged in the following. One of the main limitations of this thesis is the sample size during the data collection phase, this potentially impacted the gathered insights. Also, qualitative parts would have proven suitable to enhance the quality of this study. This qualitative part could comprise interviews

with fashion brands already incorporating NFTs in their digital customer experience and fashion companies not wanting to implement this technology. This would enrich the study with a business perspective which combined with the customer perspective gives a sound foundation for managerial decisions. Moreover, the author recommends organizing focus groups or similar activities before starting quantitative data collection to give survey participants an introduction to NFTs for a better understanding of the research field.

Overall, this study can be seen as a good foundation for investigating user acceptance of NFTs within the fashion industry; however, with regards to future research the author recommends potential modifications and extensions to increase predictability and reliability. For instance: (1) the value perception factor gives reason for further development to enhance reliability given the factors Cronbach Alpha value; (2) the relationship and effects between various external factors could be further explored - for example: perceived curiosity and perceived pleasure; as well as social norm on other factors - given the correlation found between the variables; (3) include a qualitative part to understand reasons for the acceptance or dismissal of NFTs in the fashion environment by customers and potential users

List of Figures:

**Figure 1:** Conceptual model for technology acceptance (left); Original TAM by Davis (1989) (right) (Marangunic and Granic, 2015)..... 4

**Figure 2:**TAM 2 (Venkatesh and Davis, 2000)(Marangunic and Granic, 2015) ..... 5

**Figure 3:** Adidas Originals into the Metaverse ©Adidas ..... 13

**Figure 4:** Genesis Collection ©Dolce & Gabbana..... 13

**Figure 5:** Wearables by ©Prada and ©Nike ..... 13

**Figure 6:** Tommy Hilfiger Metaverse Store ©Decentraland..... 14

**Figure 7:** Metaverse Fashion Week ©FashionNetwork.com..... 14

**Figure 8:** NFTs in the Fashion Industry - Extended TAM ..... 22

List of Tables:

**Table 1:** Research Hypothesis´ ..... 17

**Table 2:** Cronbach Alpha Scale Reliability ..... 18

**Table 3:** Pearson Correlation ..... 19

**Table 4:** Descriptive statistics for factors ..... 19

**Table 5:** Descriptive statistics for variables ..... 210

**Table 6:** Hypothesis Testing ..... 201

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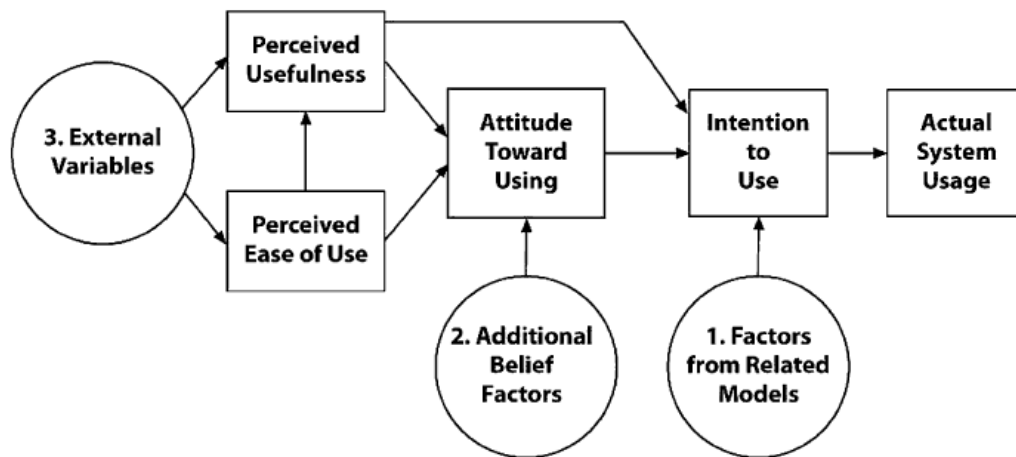
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## Appendix

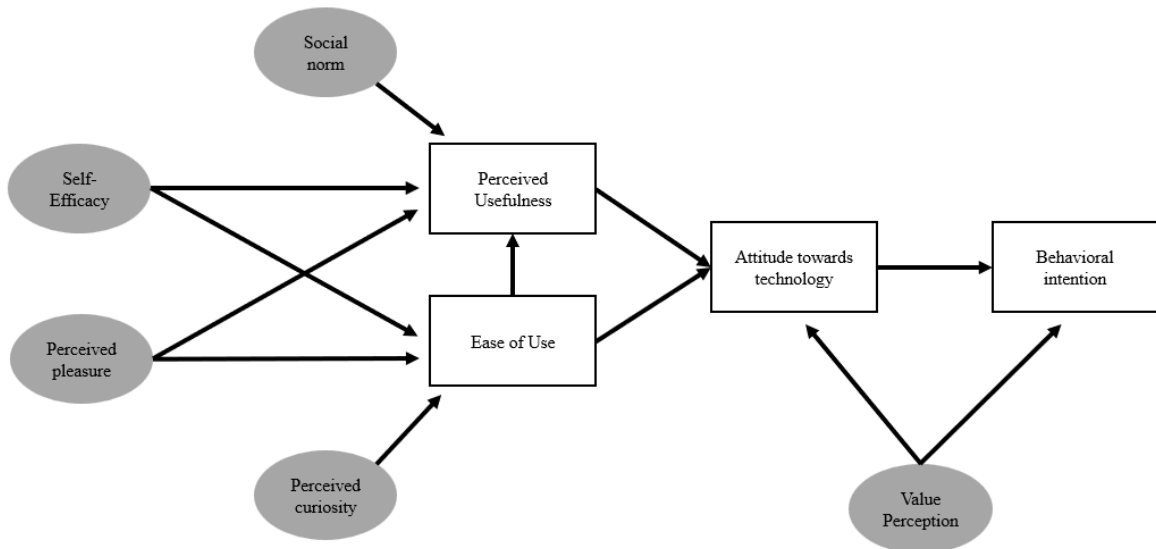
### Appendix 1: Variables and Questions

Factor No.	Factors	Statements/Variables
f1	Self-Efficacy	f1.v01: I know which tools are needed to buy NFTs f1.v02: I am confident in using the necessary tools to buy NFTs f1.v03: I can teach myself using the necessary tools by reading online instructions f1.v04: I need specialist help to buy NFTs f1.v05: I understand the concept and functionalities of NFTs
f2	Perceived Curiosity	f2.v01: I can't wait to own NFTS from a fashion brand f2.v02: I keep up to date with NFT releases from fashion brands f2.v03: I enjoy investigating new technologies such as NFTs
f3	Social norm	f3.v01: Others opinion about Fashion NFTs affect my intention to use it f3.v02: I want to buy NFTs because they are trendy and innovative f3.v03: Owning NFTs makes me stand out from the crowd f3.v04: My social network approves of exclusive and expensive items such as NFTs
f4	Perceived pleasure	f4.v01: Owning NFTs is exciting f4.v02: NFTs give me a strong sense of exclusivity f4.v03: NFTs are innovative fashion products f4.v04: I like what brands are offering me in connection with NFTs f4.v05: Having an NFT makes my shopping experience special
f5	Perceived Usefulness	f5.v01: NFTs are enhancing my shopping experience f5.v02: NFTs enable unique ways to interact with the brand f5.v03: NFTs improve my relationship with the brand f5.v04: NFTs give me access to exclusive items and/or communities (both digital and physically)
f6	Perceived ease of use	f6.v01: I would find NFTs easy to buy f6.v02: My interaction possibilities with NFTs are clear and understandable f6.v03: It is easy to become skilful at using NFTs f6.v04: Finding information about NFT releases from fashion brands is easy
f7	Value perception	f7.v01: The price of NFTs is disproportional to their benefit f7.v02: NFTs should be seen as an investment much like gold, properties etc. f7.v03: The value of NFTs is difficult to pin down
f8	Behavioural intention	f8.v01: I intend buying NFTs in the future f8.v02: I would interact with fashion brands with the help of NFTs f8.v03: I would not hesitate to buy NFTs
f9	Attitude toward technology use	f9.v01: NFTs are enjoyable f9.v02: I believe NFTs will be offered by brands more regularly in the future f9.v03: I want to buy NFTs as an investment f9.v10: I would recommend my friends, family, or colleagues to buy NFTs from fashion brands

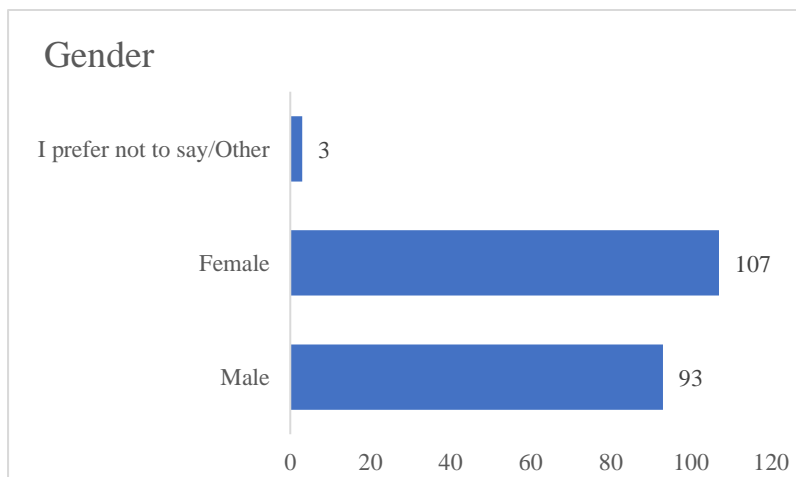
## Appendix 2: Extensions of the Technological Acceptance Model



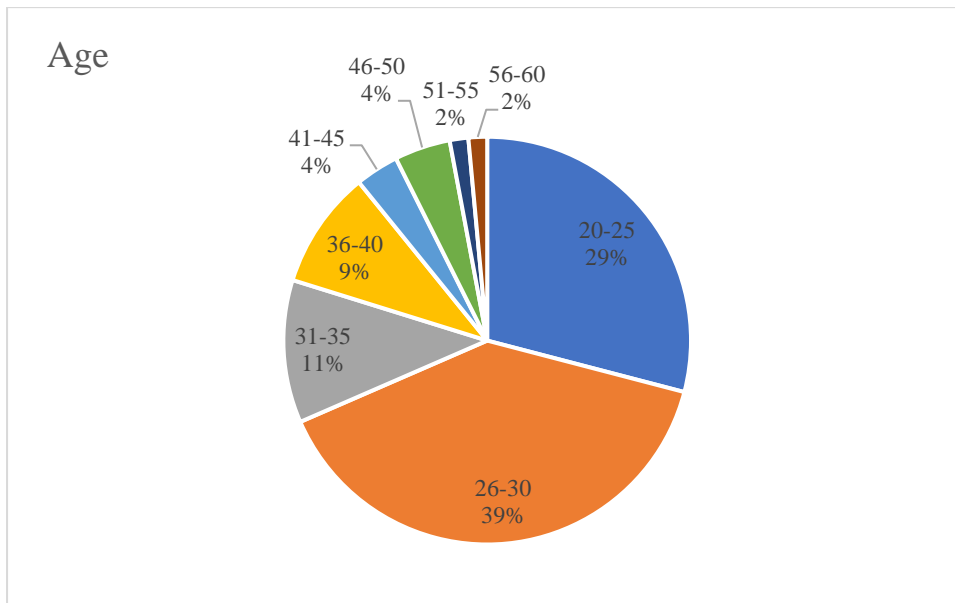
## Appendix 3: Extended TAM NFTs in the Fashion Industry



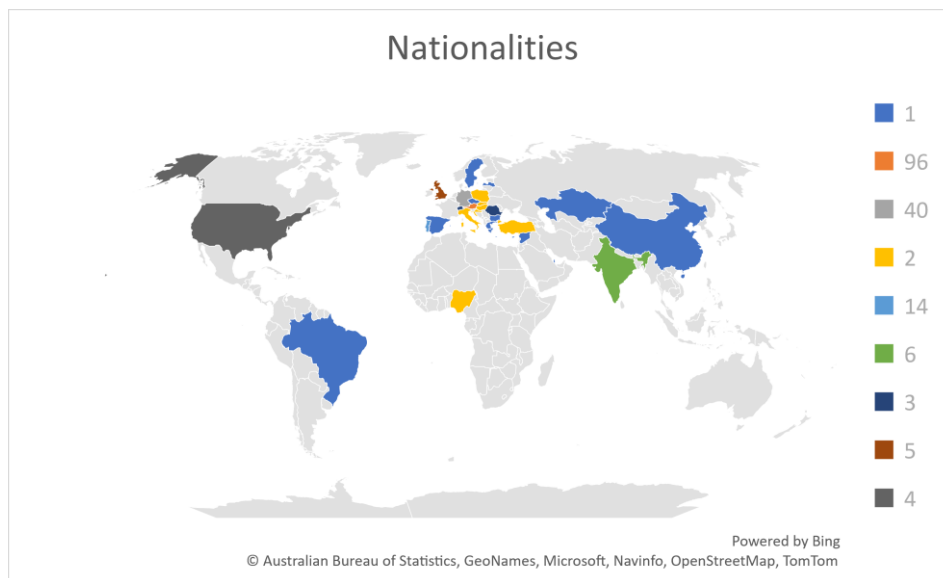
## Appendix 4: Demographics, Gender



## Appendix 5: Demographics, Age



## Appendix 6: Demographics, Nationalities



Nationality	
Andorra	1
Austria	96
Germany	40
Czech Republic	1
Syria	1
Turkey	2
Portugal	14
India	6
Hungary	2
Croatia	2
Switzerland	3
United Kingdom	5
Kazakhstan	1
Luxembourg	1
Sweden	1
Slovakia	2
Nigeria	2
United States	4
Brazil	1
Spain	1
Bulgaria	1
Greece	1
Poland	2
China	1
Italy	2
Cyprus	1
Singapore	1
Qatar	1
Latvia	1
Romania	3
France	2
Slovenia	1

203

## Appendix 7: Overall Mean per Gender

	f1	f2	f3	f4	f5	f6	f7	f8	f9	Overall Mean
<b>Female</b>	0.00	-0.41	-0.49	0.06	0.32	0.16	0.74	-0.14	-0.06	0.00
<b>Male</b>	0.52	-0.62	-0.55	-0.13	0.18	0.15	0.92	-0.09	-0.16	0.03
<b>I prefer not to say/Other</b>	-0.64	-1.74	-1.93	-2.05	1.08	0.04	1.17	-2.41	-2.38	-1.23

### Appendix 8: Overall Mean per Age Class

	<b>f1</b>	<b>f2</b>	<b>f3</b>	<b>f4</b>	<b>f5</b>	<b>f6</b>	<b>f7</b>	<b>f8</b>	<b>f9</b>	<b>Overall Mean</b>
<b>20-25</b>	0.16	-0.88	-0.70	-0.20	0.04	0.16	1.02	-0.51	-0.51	-0.16
<b>26-30</b>	0.27	-0.65	-0.56	-0.15	0.15	0.06	0.78	-0.24	-0.20	-0.06
<b>31-35</b>	0.70	-0.14	-0.03	0.57	0.76	0.19	0.94	0.29	0.42	0.41
<b>36-40</b>	0.81	0.08	-0.20	0.09	0.37	0.12	0.45	0.38	0.33	0.27
<b>41-45</b>	0.89	0.23	-0.90	0.25	0.13	0.70	0.60	0.51	0.28	0.30
<b>46-50</b>	0.65	0.01	-0.63	-0.28	0.79	0.14	0.78	0.32	0.28	0.23
<b>51-55</b>	1.58	0.43	-0.16	0.30	0.52	0.55	0.38	0.27	-0.23	0.40
<b>56-60</b>	0.70	-1.42	-1.77	-1.04	-0.17	0.95	1.01	-0.56	-0.66	-0.33

## Appendix 9: Hypothesis 1

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,396 <sup>a</sup>	,157	,153	1,465233

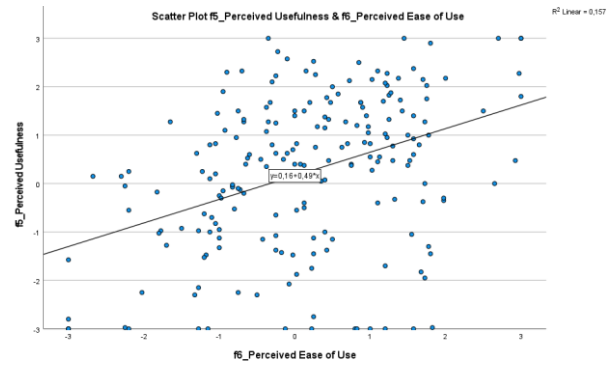
a. Predictors: (Constant), f6\_Perceived Ease of Use

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	80,267	1	80,267	37,387	<,001 <sup>b</sup>
	Residual	431,528	201	2,147		
	Total	511,795	202			

a. Dependent Variable: f5\_Perceived Usefulness

b. Predictors: (Constant), f6\_Perceived Ease of Use



## Appendix 10: Hypothesis 2

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,439 <sup>a</sup>	,193	,189	1,542223

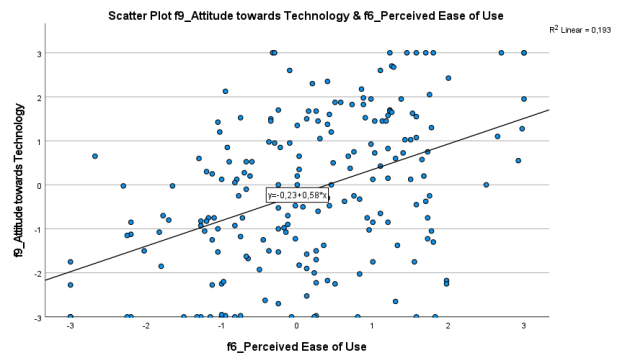
a. Predictors: (Constant), f6\_Perceived Ease of Use

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	114,056	1	114,056	47,954	<,001 <sup>b</sup>
	Residual	478,069	201	2,378		
	Total	592,124	202			

a. Dependent Variable: f9\_Attitude towards Technology

b. Predictors: (Constant), f6\_Perceived Ease of Use



## Appendix 11: Hypothesis 3

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,813 <sup>a</sup>	,661	,659	,999576

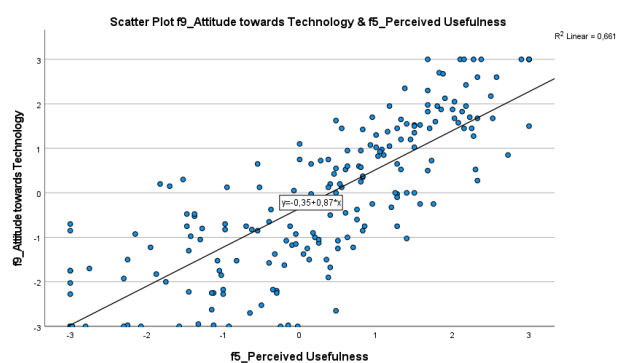
a. Predictors: (Constant), f5\_Perceived Usefulness

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	391,295	1	391,295	391,626	<,001 <sup>b</sup>
	Residual	200,830	201	,999		
	Total	592,124	202			

a. Dependent Variable: f9\_Attitude towards Technology

b. Predictors: (Constant), f5\_Perceived Usefulness



## Appendix 12: Hypothesis 4

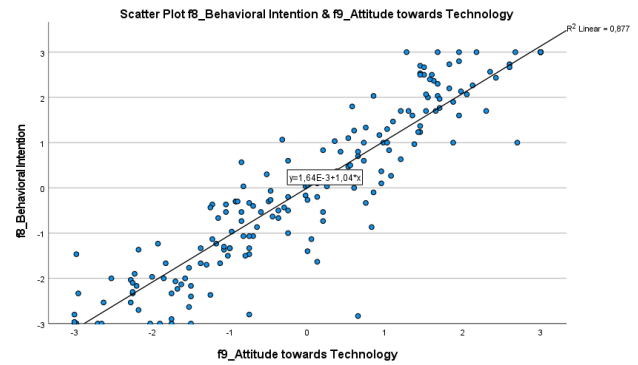
Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,937 <sup>a</sup>	,877	,877	,669778

a. Predictors: (Constant), f9\_Attitude towards Technology

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	645,117	1	645,117	1438,059	<,001 <sup>b</sup>
	Residual	90,169	201	,449		
	Total	735,286	202			

a. Dependent Variable: f8\_Behavioral Intention

b. Predictors: (Constant), f9\_Attitude towards Technology



## Appendix 13: Hypothesis 5

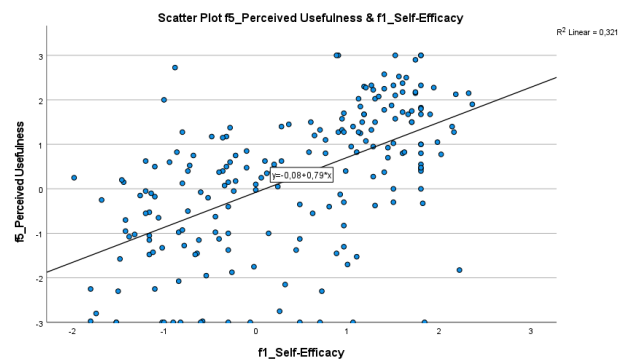
Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,566 <sup>a</sup>	,321	,318	1,314986

a. Predictors: (Constant), f1\_Self-Efficacy

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	164,228	1	164,228	94,974	<,001 <sup>b</sup>
	Residual	347,567	201	1,729		
	Total	511,795	202			

a. Dependent Variable: f5\_Perceived Usefulness

b. Predictors: (Constant), f1\_Self-Efficacy



## Appendix 14: Hypothesis 6

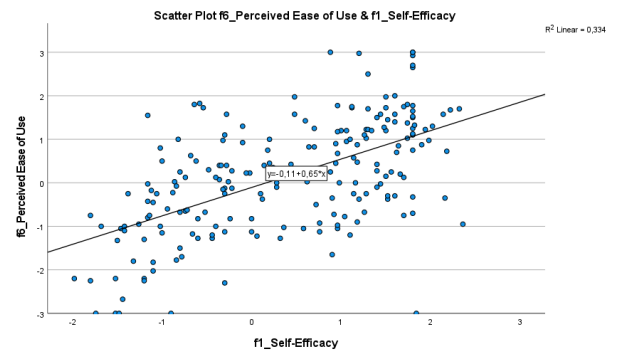
Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,578 <sup>a</sup>	,334	,331	1,058792

a. Predictors: (Constant), f1\_Self-Efficacy

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	112,919	1	112,919	100,727	<,001 <sup>b</sup>
	Residual	225,329	201	1,121		
	Total	338,248	202			

a. Dependent Variable: f6\_Perceived Ease of Use

b. Predictors: (Constant), f1\_Self-Efficacy



## Appendix 15: Hypothesis 7

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,461 <sup>a</sup>	,213	,209	1,150951

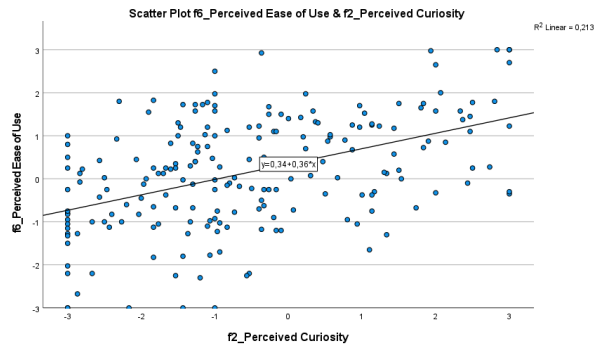
a. Predictors: (Constant), f2\_Perceived Curiosity

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	71,986	1	71,986	54,342	<,001 <sup>b</sup>
	Residual	266,262	201	1,325		
	Total	338,248	202			

a. Dependent Variable: f6\_Perceived Ease of Use

b. Predictors: (Constant), f2\_Perceived Curiosity



## Appendix 16: Hypothesis 8

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,862 <sup>a</sup>	,744	,743	,807573

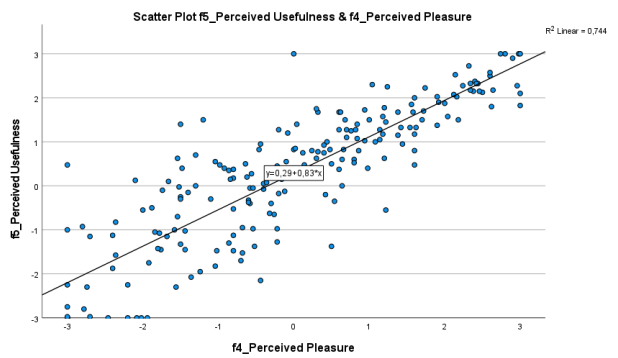
a. Predictors: (Constant), f4\_Perceived Pleasure

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	380,708	1	380,708	583,753	<,001 <sup>b</sup>
	Residual	131,087	201	,652		
	Total	511,795	202			

a. Dependent Variable: f5\_Perceived Usefulness

b. Predictors: (Constant), f4\_Perceived Pleasure



## Appendix 17: Hypothesis 9

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,403 <sup>a</sup>	,162	,158	1,187418

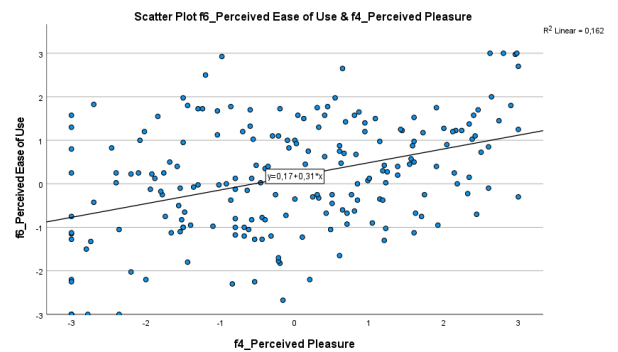
a. Predictors: (Constant), f4\_Perceived Pleasure

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	54,846	1	54,846	38,899	<,001 <sup>b</sup>
	Residual	283,402	201	1,410		
	Total	338,248	202			

a. Dependent Variable: f6\_Perceived Ease of Use

b. Predictors: (Constant), f4\_Perceived Pleasure



## Appendix 18: Hypothesis 10

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,713 <sup>a</sup>	,508	,506	1,119117

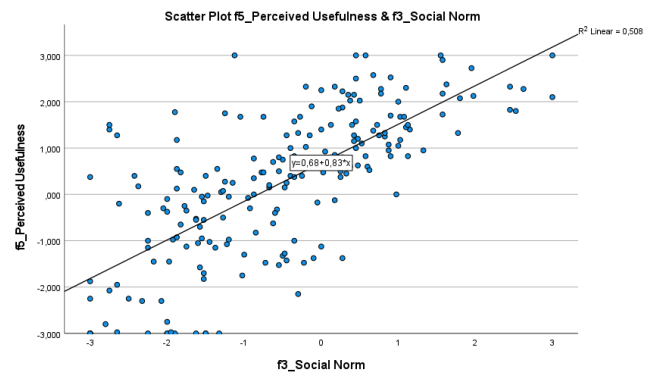
a. Predictors: (Constant), f3\_Social Norm

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	260,058	1	260,058	207,644	<,001 <sup>b</sup>
	Residual	251,737	201	1,252		
	Total	511,795	202			

a. Dependent Variable: f5\_Perceived Usefulness

b. Predictors: (Constant), f3\_Social Norm



## Appendix 19: Hypothesis 11

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,148 <sup>a</sup>	,022	,017	1,697547

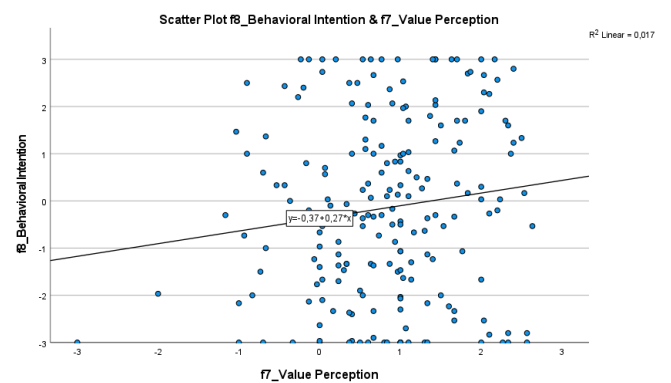
a. Predictors: (Constant), f7\_Value Perception

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12,910	1	12,910	4,480	,036 <sup>b</sup>
	Residual	579,215	201	2,882		
	Total	592,124	202			

a. Dependent Variable: f9\_Attitude towards Technology

b. Predictors: (Constant), f7\_Value Perception



## Appendix 20: Hypothesis 12

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,130 <sup>a</sup>	,017	,012	1,896441

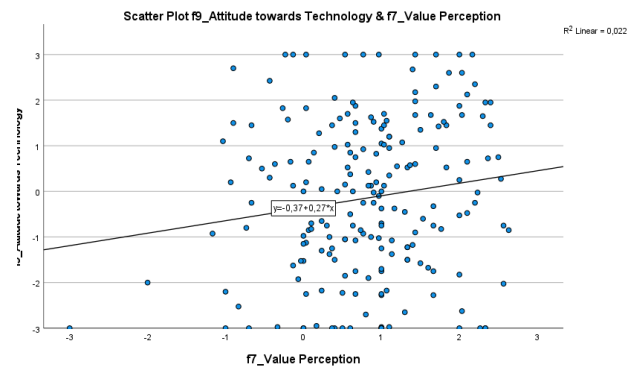
a. Predictors: (Constant), f7\_Value Perception

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12,392	1	12,392	3,446	,065 <sup>b</sup>
	Residual	722,894	201	3,596		
	Total	735,286	202			

a. Dependent Variable: f8\_Behavioral Intention

b. Predictors: (Constant), f7\_Value Perception



## Appendix 21: Factor Explanation Ease of Use

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,586 <sup>a</sup>	,343	,333	1,056595

a. Predictors: (Constant), f2\_Perceived Curiosity, f1\_Self-Efficacy, f4\_Perceived Pleasure

### ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	116,086	3	38,695	34,661	<,001 <sup>b</sup>
	Residual	222,162	199	1,116		
	Total	338,248	202			

a. Dependent Variable: f6\_Perceived Ease of Use

b. Predictors: (Constant), f2\_Perceived Curiosity, f1\_Self-Efficacy, f4\_Perceived Pleasure

## Appendix 22: Factor Explanation Perceived Usefulness

### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,869 <sup>a</sup>	,755	,750	,795756

a. Predictors: (Constant), f3\_Social Norm, f6\_Perceived Ease of Use, f1\_Self-Efficacy, f4\_Perceived Pleasure

### ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	386,416	4	96,604	152,558	<,001 <sup>b</sup>
	Residual	125,379	198	,633		
	Total	511,795	202			

a. Dependent Variable: f5\_Perceived Usefulness

b. Predictors: (Constant), f3\_Social Norm, f6\_Perceived Ease of Use, f1\_Self-Efficacy, f4\_Perceived Pleasure

### Appendix 23: Factor Explanation Attitude towards Technology

#### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,823 <sup>a</sup>	,677	,674	,977814

a. Predictors: (Constant), f5\_Perceived Usefulness, f6\_Perceived Ease of Use

#### ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	400,900	2	200,450	209,650	<,001 <sup>b</sup>
	Residual	191,224	200	,956		
	Total	592,124	202			

a. Dependent Variable: f9\_Attitude towards Technology

b. Predictors: (Constant), f5\_Perceived Usefulness, f6\_Perceived Ease of Use

### Appendix 24: Factor Explanation Behavioral Intention

#### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,937 <sup>a</sup>	,877	,876	,671249

a. Predictors: (Constant), f7\_Value Perception, f9\_Attitude towards Technology

#### ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	645,171	2	322,585	715,942	<,001 <sup>b</sup>
	Residual	90,115	200	,451		
	Total	735,286	202			

a. Dependent Variable: f8\_Behavioral Intention

b. Predictors: (Constant), f7\_Value Perception, f9\_Attitude towards Technology

## Appendix 25: Screenshots; Full Questionnaire Qualtrics

Thank you for taking the time to participate in this research study.

This research is part of my master's thesis at Nova School of Business and Economics. This study investigates attitudes towards and technological acceptance of Non-Fungible Tokens in the Luxury Fashion industry.

The study will take approximately 3-5 minutes and mainly consists of several multiple-choice questions. Please answer all questions as truthfully and intuitively as possible. There are no wrong answers, your opinion is of the utmost value.

All of your responses are anonymous and will be treated confidentially, with no further contacts concerning this questionnaire.

For any questions or further inquiries, please contact me via e-mail at [49316@novasbe.pt](mailto:49316@novasbe.pt)

By clicking the arrow you are consenting to participate in this research study.



Before starting the survey here are short definitions for NFTs and the Metaverse:

**NFTs** are unique digital tokens that serve as proof of ownership of an asset, and cannot be replicated. NFTs use blockchain technology, which acts as a digital record of all transactions related to the NFT on a vast network of computers. While NFTs can be used to represent physical assets, like property or artwork, the majority of NFTs represent collectible digital assets like digital artwork, music, photos, videos, or even virtual plots of land in the Metaverse.

(Optional: Explanatory Video - [NFTs explained in 4 minutes](#))

The **Metaverse** is considered a shared social space with customisable avatars to represent users. A digital world, where avatars interact can interact in a three-dimensional application and live life like humans. Trading virtual property (buying, selling, renting, etc.) are possible in the same way than in the real world. Examples are Decentraland, Fortnite, Roblox or The Sandbox.



Please check your agreement or disagreement with each of the following statements.

Strongly disagree -3      Somewhat disagree      Neither agree nor disagree      Somewhat agree      Strongly agree 3

I know which tools are needed to buy NFTs



I am confident in using the necessary tools to buy NFTs



I can teach myself using the necessary tools by reading online instructions



I need specialist help to buy NFTs



I understand the concept and functionalities of NFTs



Please check your agreement or disagreement with each of the following statements.

Strongly disagree -3      Somewhat disagree      Neither agree nor disagree      Somewhat agree      Strongly agree 3

I can't wait to own NFTs from a fashion brand



I keep up to date with NFT releases from fashion brands



I enjoy investigating new technologies such as NFTs



In the following different use cases are showcased to you, please read them carefully.

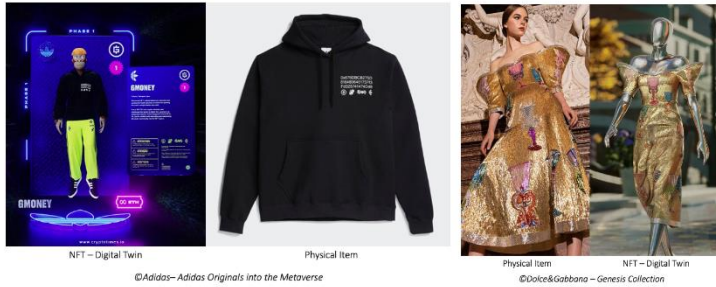


### "twinning digital NFTs to physical items"

Digital twins are a virtual representation of real-world physical objects; a digital counterpart to something that also exists as a physical object or being.

More importantly, these twins create persistent digital properties elevating physical merchandise to a verifiable representation in social and immersive digital spaces (metaverse, web3 applications, online-games).

Examples:



### "wearables aka virtual clothing"

Digital fashion can be seen as a natural extension of applying social media filters; fashion brands are offering NFTs in the form of wearables to create a bridge between the physical and virtual worlds.

NFTs give you the possibility to dress your virtual avatar on web3 applications such as Decentraland, Sandbox, etc. enabling personal expression in the digital realm.

Examples:



### "NFTs a key to exclusive content"

Other brands have converted NFTs into keys to accessing

- exclusive online content like metaverse fashion shows
- access to exclusive communities
- presale rights
- online games
- etc.





Please check your agreement or disagreement with each of the following statements.

Strongly disagree -3      Somewhat disagree      Neither agree nor disagree      Somewhat agree      Strongly agree 3

NFTs are enhancing my shopping experience

NFTs enable unique ways to interact with the brand

NFTs improve my relationship with the brand

NFTs give me access to exclusive items and/or communities (both digital and physical)

Please check your agreement or disagreement with each of the following statements.

Strongly disagree -3      Somewhat disagree      Neither agree nor disagree      Somewhat agree      Strongly agree 3

I would find NFTs easy to buy

My interaction possibilities with NFTs are clear and understandable

It is easy to become skillful at using NFTs

Finding information about NFT releases from fashion brands is easy

Please check your agreement or disagreement with each of the following statements.

Strongly disagree -3      Somewhat disagree      Neither agree nor disagree      Somewhat agree      Strongly agree 3

The price of NFTs is disproportional to their benefit

NFTs should be seen as investment much like gold, properties etc.

The value of NFTs is difficult to pin down

Please check your agreement or disagreement with each of the following statements.

Strongly disagree -3      Somewhat disagree      Neither agree nor disagree      Somewhat agree      Strongly agree 3

I intend buying NFTs in the future

I would interact with fashion brands with the help of NFTs

I would not hesitate to buy NFTs

Please check your agreement or disagreement with each of the following statements.

Strongly disagree -3      Somewhat disagree      Neither agree nor disagree      Somewhat agree      Strongly agree 3

NFTs are enjoyable

I hope NFTs will be offered by brands more regularly in the future

I want to buy NFTs as an investment

I would recommend my friends, families or colleagues to buy NFTs from fashion brands

**What is your gender?**

Female

Male

Other

I prefer not so say

---

How old are you?



---

What is your nationality?

We thank you for your time spent taking this survey.  
Your response has been recorded.