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NON-FUNGIBLE TOKENS IN FOOTBALL – A CONSUMER
BEHAVIOUR APPROACH

Dissertation submitted to Universidade Católica Portuguesa to
obtain the M.Sc Degree in Psychology in Business and
Economics

By

Bruno Francisco da Silva Nunes

Faculdade de Ciências Humanas

September 2022



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Under the supervision of Professor Francisco Esteves

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Abstract

The human passion for sports is as old as we can all remember. Every year, stadiums and arenas are full of fervent supporters, dressed in their team colors, filled with hopes and dreams. Football is, historically, the biggest sport in the entire World. The market itself is growing year after year, with more money and competition entering the sport constantly. With all factors, some of them uncontrolled, that can disrupt a team's performance over the year, namely injuries, diseases, or even bad luck, how can football club managers guarantee a yearly profit? In this study, the role of brand loyalty and brand equity was deeply analyzed and applied from a football club perspective. Besides, it was explored how these and other variables, could correlate with a tendency to buy football clubs' *non-fungible tokens* (NFTs). NFTs, and particularly sports-related NFTs, have been on a growing path recently, with billions of euros involved in transactions. A survey was created and applied online, with a final sample of 156 participants, composed of individuals from 18 to 73 years old ($M=38.36$, $SD=13.97$) and a majority of females (57.69%). The results showed a correlation between the variables a) previous tendency to buy NFTs in general, b) club equity, c) fan loyalty towards the team and d) football and own club fandom, and the variable tendency to buy football club's NFTs. Also, gender was not significantly correlated with the tendency to buy football clubs' NFTs.

Keywords: Sports, Football, Brand Loyalty, Brand Equity, Non-Fungible Tokens

Resumo

A paixão da raça humana pelo desporto é antiga. Todos os anos, estádios e arenas enchem-se de adeptos fervorosos, vestidos a rigor com as cores do seu clube, cheios de esperanças e sonhos. Historicamente, o futebol é o maior desporto do Mundo. O mercado do futebol tem crescido ano após ano, com mais dinheiro e mais concorrência a entrar no desporto constantemente. Com todos os fatores, alguns deles incontornáveis, que podem afetar a *performance* de uma equipa durante o ano, nomeadamente lesões, doenças, ou até azar, como é possível que um gestor futebolístico consiga garantir lucro anual? Neste estudo, o papel da lealdade à marca e da imagem sua imagem foram analisados a fundo e aplicados ao futebol. Mais, foi explorado como é que estas e outras variáveis, podem correlacionar-se com a tendência de uma individuo comprar *non-fungible tokens* (NFTs) do seu próprio clube. NFTs, e em particular NFTs relacionados com desporto, têm estado num caminho de crescimento económico, com milhares de milhões de euros envolvidos em transações. Um questionário foi criado e aplicado *online*, com uma amostra final de 156 participantes, compostos por indivíduos entre os 18 e os 73 anos ($M=38.36$, $SD=13.97$), sendo a maioria composta por mulheres (57.69%). Os resultados demonstram uma correlação entre as variáveis a) tendência prévia para comprar NFTs no geral, b) imagem do clube, c) lealdade dos fãs para com a equipa, e d) nível percecionado de gosto por futebol e pelo clube, com a variável tendência para comprar NFTs de clubes de futebol. O género não demonstrou uma correlação significativa com tendência para comprar NFTs de clubes de futebol.

Palavras-Chave: Desporto, Futebol, Lealdade à marca, Imagem da marca, Non-Fungible Tokens

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General Introduction

Throughout history, sports have been a constant in human life. The first records of a sporting event recall from 776 BC, the first Ancient Olympic Games in Olympia, Greece. Every year, worldwide fans spend time, energy, and money to support their favorite teams. Further, fans even consider that their team is their passion and a big part of their identity (Vallerand et al., 2008). Events like the World Cup Final are watched live by thousands of fans (Reuters, 2022), and the ones who are not there, gather around bars, pubs, and restaurants to watch the game and recreate a stadium atmosphere (Weed, 2010).

According to recent reports, 23.4% of all individuals in the United States of America practiced sports or exercised every day in 2020, compared to only 18.5% in 2010 (Statista, 2022). Between 2000 and 2020, the number of individuals in the United States of America that has a membership in a fitness center or a health club has doubled (Statista, 2022).

Sports are growing, even from a monetary point of view. In 2018, the EU's 27 members spend a combined total of over €50 billion on sports and recreation (Eurostat, 2020). Teams like the Tottenham Hotspurs FC, a British Premier League club, charged over GBP£2 thousand pounds for a yearly ticket in 2022, yet, their fans flood their stadium for every single game of the season (Statista, 2022). The next World Cup in Qatar has already cost around US\$200 billion, 20 times more than what was spent on the 2018 Russia World Cup (Fermie, 2022).

In 2021, the most valuable sports team in the World was the Dallas Cowboys, with an estimated value of US\$5.7 billion and a five-year value growth of 43% (Ozanian, 2022). Actually, all of the top 50 teams in this report had grown by at least 23% in the previous five years. Teams like the Golden State Warriors (National Basketball US Association), Liverpool (Football English Premier League), Manchester City (Football English Premier League), and Los Angeles Rams (National Football US League) are a few examples of teams in this Forbes' ranking that grew more than 10% during a five-year span. Only four sports have teams in this ranking: football, basketball, American football, and baseball. All football teams are European and the rest are all based in the United States of America, showing a big dichotomy of dominance between the two geographical areas.

Focusing more on European football and looking to the “*Big Five*” national leagues - English, Spanish, German, Italian and French leagues, the leagues that traditionally and recently are the most dominant in European football – there has been a big leap in money generation this decade. Even with the COVID-19 outbreak and the limited attendance in stadiums, in 2019/20 the “*Big Five*” had a total revenue of more than €15 billion compared to around €8.4 billion in 2009/10 (Statista, 2022). This report also predicted that these leagues will recover well from the pandemic, raising their revenue to an all-time high in 2022/23 of €16.5 billion.

In a more general perspective, the global sports market is expected to grow to US\$501.43 billion in 2022, compared with US\$354.96 billion in 2021, at a compound annual growth rate (CAGR) of 41.3 % (Sports Global Market Report, 2022). The market is expected to continue growing but at a slower pace, since it grew rapidly after the big Covid-19 crash, and is predicted to reach US\$707.84 billion in 2026 at a CAGR of 9% (Sports Global Market Report, 2022).

With these amounts of money involved and with such a fast-paced growing market, all market players need to understand how to make the most of it. But, sports aren’t scientific and teams’ performance fluctuates. From 1889/90 until 2016/17, no team has won the European Champions League, the most important competition in European football, twice in a row.

Since sports are so unpredictable, due to various factors like player injuries/diseases, weather, motivation, psychological problems, team bonding, and even luck – even though that is difficult to account for, studies have shown that 35% of upsets (“better team” losing to “worst team”) in basketball, for instance, are explicable by luck (Aoki et al., 2017) – how can sports team guarantee high revenues even in bad years/seasons? How can a sports team manager find a constant in such an inconstant area? Is it possible to generate money when their core product has been disappointing?

In this study, we will analyze and provide a significant theoretical contribution to how can sports teams maintain a healthy financial position, even after lackluster years. We suggest, after a meticulous literature review, that this can be accomplished with strong club equity and fan loyalty towards their club. The following chapters will be dedicated to how these, and other, factors could contribute to a highly profitable entrance into the fast-

growing *Non-Fungible Tokens* (NFT) sports market, giving teams the chance to even make a profit in their worst years, to their image and their fans' dedication and passion.

Literature Review

Brand Loyalty

Brand loyalty could be defined “as the deeply held commitment toward rebuying the brand in the future regardless of the situational factors” (Chaudhuri & Holbrook, 2001). More loyal fans are more involved in the teams’ activities off-field, such as buying merchandise or attending special events, strengthening the economic power of the team (Yousaf et al., 2017).

A “fan”, in the sports context, “can generally be defined as someone who perceives him- or herself as a fan of a certain team or a sport in general” (Dietz-Uhler et al., 2000). In several countries, like Portugal, being a team fan is different from being a sports fan. It is passion, culture, history, and almost socially mandatory (de Carvalho, 2011).

Product-related brand attributes account for the core product of a team. It consists of the team itself, the head coach, the star player, their success and how they play. The non-product-related brand attributes are less palpable things like tradition, club history, logo, club colors, fans, and stadium environment. (Bauer et al., 2008). Curiously, product-related brand attributes have significantly fewer benefits to fans than non-product-related attributes (Bauer et al., 2008).

Other recent research even points out that the success and good results of the team are not significant predictors of long-term brand loyalty (Gladden & Funk, 2001) suggesting that winning is not the focal point of brand loyalty. Contextual factors, like the stadium atmosphere, club tradition, and history, have greater relevance to the fans (Bauer et al., 2008). A good stadium atmosphere, due to it being full of supporters with high brand loyalty, can bring more revenue and profit, positively influence team results and raise the excitement of other fans (Keshtidar et al., 2018).

Brand loyalty also ensures high media ratings, resulting in broadcasters demanding premium payments to that team’s sponsors, originating more money from the advertisement. (Gladden & Funk, 2001)

Another key finding is that brand loyalty gives teams the opportunity to extend their product beyond their initial core product (e.g. football teams selling tickets to their

museums instead of just playing football). This way, new products emerged, such as team-related merchandise stores and restaurants in close proximity to the stadium, enabling the team to have additional revenue by owning the ventures or sharing profits with previous agreements (Gladden & Funk, 2001). This phenomenon even allows teams to extend their brand across different regions and forget geographic limits, “for example, Manchester United of the English Premier League plan to open merchandise stores in Singapore” (Gladden & Funk, 2001) and other European teams that have stores in other continents, usually North America and Asia.

So, sports teams’ management should aim to increase the loyalty of their fan base, in order to maintain some context and profit stable and continuous, to avoid taking major hits when their core product, subject to variations in quality, is not successful. (Ross et al., 2006).

Nostalgia and old memories, also have a positive significant relation with brand loyalty (Gladden & Funk, 2001). Once the marketing team understands what are these nostalgic triggers (e.g. remember winning an epic championship), they can explore them and remind fans that their team has the ability to satisfy their nostalgic need (Gladden & Funk, 2001).

Brand loyalty could be subdivided into two dimensions: behavioral loyalty and attitudinal loyalty (Jacoby et al., 1978).

Behavioral loyalty could be defined as the propensity of the consumer to purchase products from the same brand repeatedly over time (Jacoby et al., 1978). In sports terms, behavioral loyalty can be shown when fans buy season tickets or single tickets to games over time. Unfortunately, these indicators are not enough to understand the psychological processes of the fans towards the team and could be misleading (e.g. someone could have a season ticket because it was given to him). (Mahony et al., 2000) So, it is important to consider attitudinal loyalty.

Attitudinal loyalty, on the other hand, could be seen as an underlying consumer behavior that tends to consistently have favorable attitudes towards the brand and will lead to increased consumption of their products (Mahony et al., 2000). It is typically defined as the psychological attachment to some brand (Beatty & Kahle, 1988).

Some sports teams have unique and clear identities and values that are distinguishable and that fans like to be part of. For instance, FC Schalke 04, a football team from Gelsenkirchen, Germany, is known as a “working-class club”. (Ross et al., 2006). There are also clubs that build their image around cities or respective neighborhoods, such as Chelsea or Arsenal, two London-based football teams (Ross et al., 2006). So, teams and their fans, together, create an identity of themselves that they proudly carry. When it is broken, brand loyalty is at risk (e.g. when Cleveland Cavaliers, a National Basketball Association team, reallocate to 40 miles of the city center, they experience difficulties in selling out the arena, a thing that has happened regularly prior) (Gladden et al., 2001).

Consumers do not buy product attributes, they buy bundles of benefits (Bauer et al., 2008). Benefits can be defined as the personal value that consumers attach to a product or service (Keller, 1993), based on their personal and unique needs, so, it is not totally intrinsic to the product or service obtained.

Keller (1993) suggests that these benefits could be split up into three different categories: functional benefits, symbolic benefits and experimental benefits.

Functional benefits are more related to intrinsic characteristics or attributes that the consumer sees in the product or service (Keller, 1993). These benefits are often linked with consumption-related needs, and consumers focus on their functional and utilitarian performance (Bauer et al., 2008). Symbolic benefits emerge to fulfill underlying needs of social approval, to raise self-esteem (Keller, 1993), or ego identification (Bauer et al., 2008). Consumers do not focus so much on product attributes, but rather on necessities, even though they could value exclusivity, prestige or fashionability (Keller, 1993). At last, experimental benefits appease needs such as sensory pleasure and cognitive stimulation, with consumers valuing what they feel when using the product or service (Keller, 1993).

Spectators at sports stadiums, for instance, are more prone to seek experiential and symbolic needs rather than functional ones (Bauer et al., 2008), searching for social approval, group identification, sensory pleasure, and cognitive stimulation.

Brand Equity

To guarantee that a team has economic success even in the dark times of their core product, a heavy emphasis on good team branding to ensure a higher brand valuation and correspondingly good brand equity must exist. (Yousaf et al., 2017)

Brand equity is defined as “the set of brand assets and liabilities linked to a brand adding to or subtracting from the value provided by a product or service to a firm and to the firm’s customers.” (Aaker, 1991) and could be the difference-maker between two equal products with same features from different brands (Yoo & Donthu, 2001). This concept emerged in the 1980s and since then it is an important driver for evaluating a firms’ long-term performance (Sriram et al., 2007).

A high team brand equity can result, not only in a preference against other brands (or non-brand products), but also in an increase in fan loyalty, a higher sense of positive differentiation of the team, a larger global presence, and even allows the team to charge premium prices (Guenzi & Nocco, 2006), all critical factors to improve economic status (Bauer et al., 2005).

Keller’s (1993) model and conceptualization of brand equity consists of two different components: brand awareness and brand image. Brand awareness is what enables consumers to recognize and recall the brand. Without it, brand associations cannot be formed and there are no intentions to buy the brand’s products.

Again, and same as brand loyalty, even with the unpredictability and instability of the team-sport core product, which is related to team performances and outfield results, brand image has the potential to be one of the few constant variables in fans’ perceptions.

A good example of the effects of high fan brand loyalty and high perceived brand image is the Chicago Bulls (National Basketball Association team) case. In 2000, two years after their last championship and two years after the last Michael Jordan game (their biggest star and arguably basketball’s biggest icon), the Chicago Bulls had one of the worst win-loss records in the entire North American National Basketball Association for a second straight year. Even with decreases in both overall attendance and media ratings of the league, the Chicago Bulls continue to have full crowds in their games and were, still, the most popular NBA team, domestically and internationally, being the team that sold the

most merchandise in the league. (Gladden et al., 2001). Even with their core product in a big crisis and being extremely underwhelming, their fans are still with the team and they are still hugely popular, maintaining a good brand equity/image.

Cryptocurrency

A virtual currency can be described as an alternative to money, with a digital representation of its value, but that is not issued by a central bank or credit institution (European Central Bank, 2015). If a virtual currency uses cryptographic principles, it is called cryptocurrency.

Cryptocurrency is a type of digital currency based on a peer-to-peer network, a market design that allows transactions to be made without a mediator regulating it. Due to this, the cryptocurrency market has decentralized control, independent of any government or central control. Cryptography is the foundation for cryptocurrency encryption and it ensures the security of the market. (Narayanan et al., 2016). The first cryptocurrency to exist was Bitcoin (Nakamoto, 2008).

Blockchain technology is the key behind cryptocurrencies (Johansen, 2018). This technology allows users to have all their transactions in a shared digital ledger, guaranteeing that there is transparency behind each currency and that each transaction is registered. Also, all transactions are coded differently, ensuring that no one can sell the same cryptocurrency in two different transactions (Kelly, 2014). All transactions are stored in “blocks” and follow the “chain” of history (Arli et al., 2020).

Blockchain eliminates the need for any third-party intervention in transactions. Due to this, cryptocurrencies can be negotiable without paying fees and international taxes, even if they are sold beyond borders (Mendoza-Tello et al., 2019).

Bitcoin, as previously said, was the first cryptocurrency and paved the way for new ones. New cryptocurrencies are called alternative currencies (or altcoins, abbreviated), and have different features that differentiate them (Mendoza-Tello et al., 2019).

Non-Fungible Tokens (NFT)

Non-Fungible Tokens (NFT) is a type of crypto asset that is derived from the smart contracts of Ethereum (Wang et al., 2021) – Ethereum is the second biggest blockchain

network and was created to fill the gap of the lack of smart contracts on the Bitcoin blockchain network (Parham & Breitinger, 2022). A smart contract is a code that facilitates, executes, and enforces the agreement between the selling and buying parts, without the intervention of a trusted third party (Alharby & Van Moorsel, 2017).

Although NFTs function in a similar way to cryptocurrency (peer-to-peer and in a decentralized blockchain), their purpose is different (Parham & Breitinger, 2022). Cryptocurrencies are regular coins. For instance, if we take Bitcoin as an example, one bitcoin has the same value as any other bitcoin. They are indistinguishable and equivalent in terms of value (Wang et al., 2021), like physical money. A one euro coin has the same value as another euro coin. NFTs are, as the name indicates, *non-fungible* – something that is unique and non-replaceable by an equal. No NFT is the same as another.

But, more objectively, what is an NFT?

A *non-fungible token* is a token that proves that its owner, and only him, have ownership rights over an asset (Kugler, 2021). This asset can be an image, a video, a collectible item, an artwork, a ticket to an event (Wang et al. 2021), or even a sports trading card (Sorare.com, 2022).

And how valuable is it? “It is as valuable as people express a willingness to pay for it” (Chohan, 2021).

Kugler (2021), gives a perfect simplified explanation for it:

“Think of an NFT like the documents that come with owning an original Picasso. Art experts verify your Picasso is, in fact, original; they verify your ownership and provide documentation. As a result, the world accepts that you own an original Picasso. The only big difference here is that NFTs make it possible to verify ownership of digital assets. (...) Before NFTs, there was no widely accepted way to determine the "original" piece of a digital artwork. There was also no widely accepted way to prove or transfer its ownership. NFTs have changed that, and with it, they're changing the world of art.”

The first NFT originated from “Colored Coins”, in 2012, representing an identifiable unit of a single Satoshi, a fragment of a bitcoin (0.00000001 BTC) (Parham & Breitinger, 2022).

In the early days of NFTs, the majority of the market was dominated by art-related content (Parham & Breitinger, 2022), but this trend completely shifted in recent years.

Many believe that this “shift” was driven by an NFT record sale that happened in early 2021 (Trautman, 2021). On March 11th, Metakovan, a pseudonym of an investor, paid US\$69.3 million for a series of digital artwork from the artist Beeple’s, “Everydays – The first 5,000 days” (Chohan, 2021; Kugler, 2021; Parham & Breitinger, 2022; Trautman, 2021, and Wang et al., 2021). All this money was paid for the ownership of a series of JPEG files. At that moment, this was the third most lucrative auction for a piece of art, only behind Jeff Koons and David Hockney’s works (Kugler, 2021).

Later that year, and even more shocking for some, was the sale of the rights of the first *tweet* ever, made by his creator Jack Dorsey, where you can read “just setting up my twttr”. This tweet is available for everyone to see, but the ownership of it was sold for US\$2.9 million (Trautman, 2021). The total sale of NFTs was estimated at US\$12 million in December 2020 but skyrocketed to around US\$340 million in just two months (Wang et al., 2021).

Figure 1. First ever tweet



Note. by Jack Dorsey, 2006, retrieved from twitter.com

But why? Why would someone buy something that is accessible to everyone for free? Trautman (2021), believes the answer is simple. Humans value rarity and uniqueness, particularly in a social context. There is a sense of social admiration towards the art itself and towards the owner of the piece of art. And this can happen if you own the digital representation of Mona Lisa’s Louvre painting or a specific online game collectible. It depends on what the owner and his community support and enjoy.

So, the NFT phenomenon is distinctive from the cryptocurrency one. This social and *memento* side is largely independent of cryptocurrency valuation and price fluctuation. It is possible to buy something just for personal satisfaction and without awaiting profit. But, the ones who are excited and believe in cryptographic tokens are more likely to care and understand the value of an NFT and pay big sums for it (Trautman, 2021).

In 2021, some reports estimated that NFTs move more than US\$4.5 billion in transactions, per day (Wang et al., 2021).

Speculation and media's role in rapid NFT growth have been a hot topic and heavily analyzed (White et al., 2022). Some authors believe that media coverage of NFTs, usually focused on big profits and not on big losses, and financial markets, in general, could lead to irrational investor behavior with fear of missing out (Shiller, 2017), while others maintain that journalists and media cover educate readers on NFT risks, with some results pointing out to decreases in NFT sales after big news about it (White et al., 2022). So, it is difficult to establish some cause-and-effect relation between speculation and the NFTs market growth.

One of the darkest sides of NFTs, and crypto assets in general, were the heavily associated pollution that comes with it. A lot of energy is needed to verify the proof-of-work blockchain, resulting in tons of carbon emissions (Weijers & Turton, 2021). There were options to mint and sell NFTs at the lowest carbon emission price, but the audience was lower, which left artists with a dilemma: more audience and profit, or fewer carbon emissions (Weijers & Turton, 2021). Estimates, based on 2021 monthly levels of pollution created by NFTs, predicted that NFT carbon emissions could be responsible for 18 future deaths per month (Truby et al., 2022). Thankfully, and due to high social pressure (Truby et al., 2022), Ethereum, the biggest blockchain when it comes to the NFT market, changed its methods and is now, since Q3 2022, a much *greener* blockchain, only consuming 0.01 TW/yr (Ethereum, 2022), eliminating of the NFT's biggest cons out of the equation.

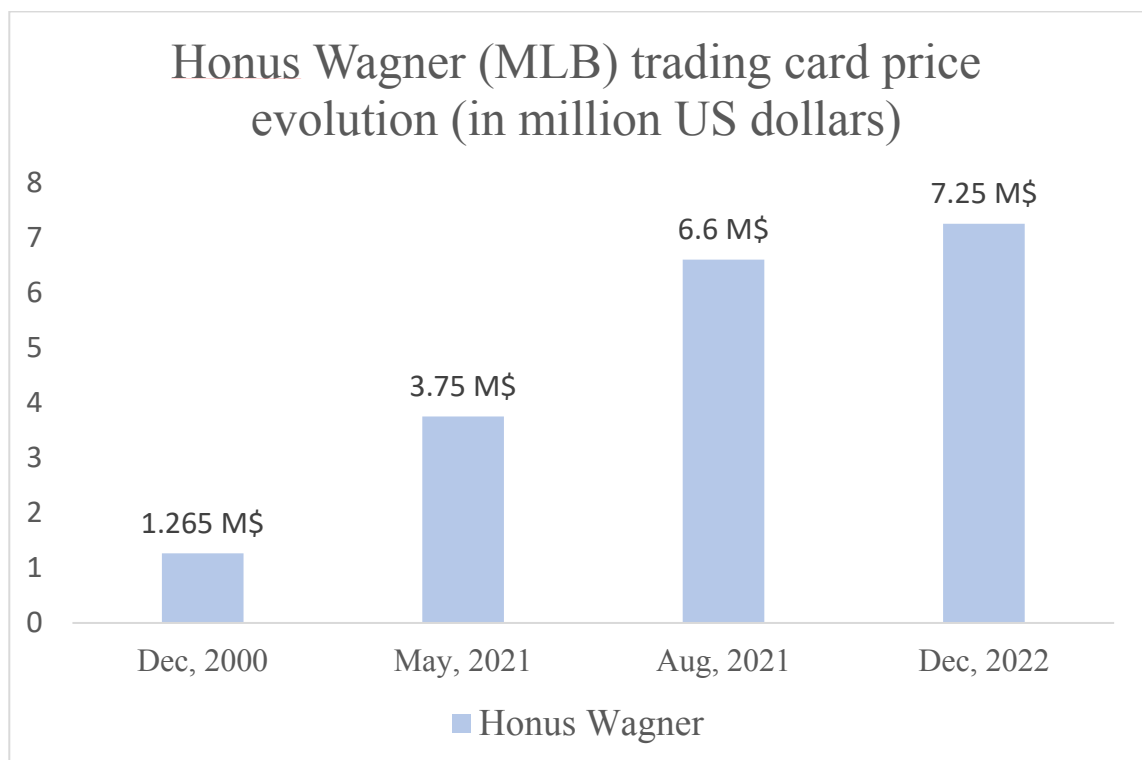
Non-Fungible Tokens in Sports

With such a growing and profitable market, a lot of diverse areas and companies understood that NFTs might be a profitable short and long-term investment, with a cost of marginal manufacturing near zero (Deloitte, 2022).

It was a question of time before the sports industry arrived at the scene. The opportunity was there. As stated prior, sports fans have high levels of loyalty toward their team and products and a need to match their distinguishable club identity, values, and image, as well as show it.

The sports industry, *per se*, already had a strong connection and history towards collectable authentic items related to certain teams, players, or coaches. On June 30th, Forbes stated that a rare autographed card of a rookie LeBron James, a legend of the National Basketball Association, was purchased for around US\$5.2 million. Forbes also reported that in the last 15 months, 23 of the 24 highest sports card transactions of all time were made (Beer, 2021). Football recently broke the one-million dollar barrier, with a 1958 Pele card, a nostalgic card, which sold for around US\$1.33 million (Hajducky, 2022).

Figure 2. Honus Wagner (MLB) trading card price evolution



Retrieved from “*Why Major League Baseball needs to do a better job of appreciating regular season greatness*” CBS Sports, D. Perry, 2021, and “*Honus Wagner card sells at auction for \$1,265,000*” Money CNN, 2000.

Figure 2 and Honus Wagner trading card price variance over the years, are sizeable examples of a) the historical presence of sports trading cards in society, with the first

transaction of US\$1 million being made in 2000, and b) sports trading card prices are “booming” recently.

All the appeal was there. And the sports industry reacted. Companies like *NBA Top Shot*, *Sorare*, or *Socios* appeared and started a digital sports revolution. All these “marketplaces” are in a skyrocket grow, but all of them sell NFTs in a different manner, not seeing them exclusively as a collectible:

a) *NBA Top Shot* started their partnership with the Golden State Warriors, selling video clips of their highlights in different games, becoming the first US professional team to ever do it. Right now, they have partnerships with all NBA teams and are responsible for US\$500 million transacted per quarter (Trautman, 2021). This platform had the highest total sales volume in 2021 when compared to all NFT platforms in every market (Schaar & Kamakis, 2021);

b) *Sorare* is a football fantasy game with NFTs involved. From the start, stars like Antoine Griezmann and Gerard Piqué invested in the platform (Sorare.com, 2022). In this “game” you own NFTs of certain players and create line-ups that could give you *Ethereum* rewards depending on their real-life performance during their football match;

c) *Socios* is a platform that gives fans a chance to make decisions and interact with football players. Fans could buy NFT tokens that would let them vote in different scenarios like the new team bus design or the next dress room *motto* or what color the captain’s armband would be (Socios.com, 2022). When Juventus scores, an Italian-based team, “*Song 2*” by “*Blur*” always plays at Allianz Stadium speakers. This was their fans’ choice, made in the blockchain (Wilser, 2021). Brings the sense of sharing a team identity to a whole new level, creating loyalty through perceived ownership (Colicev, 2022).

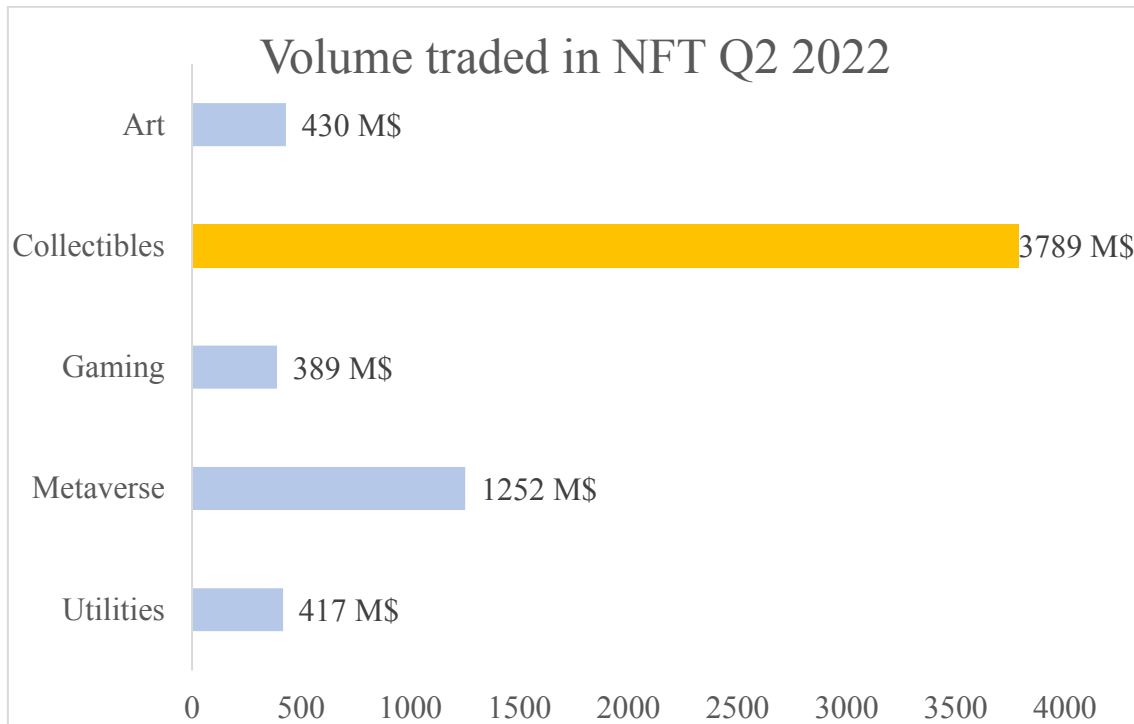
For the time being, “*Lebron James Statue of Liberty #1*” is the most expensive sports NFT ever bought, as well as the most expensive sports trading card registered, bought recently for around US\$21.6 million (OpenSea.com, 2022¹).

By the end of 2022, it is predicted that between four and five million individuals have bought or been gifted an NFT sports collectible card (Deloitte, 2022). And “what fan

¹ *OpenSea* is an American NFTs market that registers all previous transactions

wouldn't want to buy an unforgettable sports moment?" (Deloitte, 2022). Right now, the total volume of transactions in 2022 in the first two quarters of the year is estimated to be more than US\$18 billion (NonFungible.com, 2022). Collectibles are, by far, the most active and transitioned area of the NFTs World right now, as can be seen in figure 3 below, with data from the second quarter of 2022.

Figure 3. Volume traded in NFTs, per category, Q2 2022



Retrieved from *Q2 NFT Market Report 2022*. (2022, July 26). NonFungible.com.

Study aim and objectives

With all the previous in consideration, this study's aim is to understand what can influence one to buy an NFT, for collection or investment, more specifically a sports NFT. With such a growing and full of opportunities market, with billions of euros circulating every day, it is crucial to scientifically understand what drivers could possibly vary the consumers' behavior, as well as their intention and propensity to buy.

This study has the aim to increase knowledge and extend the actual literature, in understanding how consumers behave in new high perception risk investments and the role of some variables, like brand loyalty and equity, in it. The present will also assist all

present or future market players, to fathom what can be explored concerning eventual forthcoming NFT sales, generating, hopefully, more profit.

Presented evidence suggests that intention or proneness to buy, invest or collect sports NFT could be influenced by several factors. Firstly, brand equity and brand loyalty towards one specific team could influence fan predisposition to buy non-core products of the team and value more non-product-related attributes (Bauer et al, 2008; Gladden et al, 2001). Interest in NFTs *per se* could also affect sports NFT buying, as well as social and personal satisfaction towards collectibles and sports themselves (Trautman, 2021). At last, gender could also have a significant effect on interest in sports NFTs, since, in 2022, estimations determined that 63% of worldwide football fans were male (Statista, 2022).

Hence, the objectives of this study will be a) to understand the correlation between the previously stated factors and the individual's intention to buy or invest in their football teams' NFTs, b) with the correlated variables to develop a predictive multiple regression analysis of intention to buy or invest in their football team's NFTs has a dependent variable, and c) comprehend differences inside our sample with *t-tests*.

Methods

Participants

During the data collection period, 228 individuals participated in this survey. Due to abandonments and lack of answers, only 156 participants will be included in the analysis and results. The sample was composed of individuals from 18 to 73 years old ($M=38.36$, $SD=13.97$), the majority composed of females (57.69%).

Table 1. Participants' age statistics (N=156)

| | Age |
|-----------------|------------|
| Valid | 146 |
| Missing | 10 |
| Mean | 38.36 |
| Std. Deviation | 13.97 |
| Minimum | 18 |
| Maximum | 73 |
| 25th percentile | 24 |
| 50th percentile | 38.5 |
| 75th percentile | 50.75 |

Table 2. Participants' gender statistics (N=156)

| Gender | Frequency | Percent | Valid Percent |
|---------------|------------------|----------------|----------------------|
| Female | 90 | 57.69 | 58.07 |
| Male | 65 | 41.67 | 41.94 |
| Missing | 1 | 0.64 | |
| Total | 156 | 100 | |

This study's participants considered themselves as more fans of their club (M=5.83, SD=3.07) than football fans (M=4.81, SD=3.03). In general, participants indicated their self-perceived knowledge about NFTs to be low (M=3.84, SD=2.34).

Table 3. How much of a football fan and their teams' participants are

| | How much of a football fan do you consider yourself (0-10)? (Football Fan) | How much of a fan do you consider yourself, regarding this team (0-10)? (Club Fan) |
|----------------|---|---|
| Valid | 140 | 139 |
| Missing | 16 | 17 |
| Mean | 4.81 | 5.83 |
| Std. Deviation | 3.03 | 3.07 |
| Std. Deviation | 3.03 | 3.07 |

Table 4. Perceived knowledge about NFTs

| Evaluate your knowledge about Non-Fungible Tokens (0-10) | |
|---|------|
| Valid | 153 |
| Missing | 3 |
| Mean | 3.84 |
| Std. Deviation | 2.34 |

Instruments

This survey pretended to analyze the previous hypothesis stated. The organization of the survey was: a) demographic questions, b) questions regarding NFT knowledge and tendency to buy NFTs, c) brand equity related to a brand chosen by the participant, d) club equity and fan loyalty towards participants' favorite club, and e) tendency to buy/invest in previous stated brand-related NFT and favorite football club NFT. Part c) would be useful to later compare with part d) results. Asking participants to choose a brand and the team they support was convenient to avoid problems related to brand awareness and identification (Keller, 1993).

Different seven-point Likert scales were applied to measure brand equity, consumer brand loyalty, and NFTs' knowledge and tendency to buy. Likert-scale was chosen, at first, to follow the original scales and due to the facility to administer it – it is easy to comprehend (for the respondent), can be applied online, does not require any specific equipment, and the results are easily quantified (Yusof et al., 2019).

To measure the tendency to buy NFTs, a scale was created with questions regarding their functional benefits (e.g. “I would buy an NFTs as an investment”, “I would buy an NFT as a long-term investment), and their symbolic benefits (e.g. “I would buy an NFT to keep it in my personal collection”, “I would buy an NFT just to keep it for me”). This scale was used to measure the tendency to buy NFTs in general (named “NFT Index”), to buy brand NFTs (named “Brand NFT Index”), and football club NFTs (named “Football Club NFTs Index”).

To measure brand equity, both brand and football club related, it was used an index based on (Nam et al., 2011) Brand Equity measure. This measure was translated to Portuguese and re-translated to English to understand if it was still fair to his original. For each item, the possible answers followed a seven-point Likert scale, from “1- Totally Disagree” to “7- Totally Agree”, referring to a specific statement. This measure was chosen due to its discriminant validity since all average variance extracted from each construct was higher than the square of the correlations between them. This measure also meets the convergent validity.

When measuring consumer brand loyalty related to their favorite football club, the scale used was based on (Mahony et al., 2000) study, “The Psychology Commitment to a Team (PCT)”. The scale was adapted to football clubs, instead of American football teams, due to the popularity difference between sports in different countries. The same procedure and Likert scale were used as in the Brand Equity measure. This measure was chosen due to its applicability, high internal consistency, strong predictive validity, and construct validity (Mahony et al., 2000).

Concerning the items related to brand and football club equity and fan loyalty, it was asked the participants to name a brand they respect and their favorite football club, and consider them from that point on, in the rest of the survey. This way, questions would become less abstract and more objective.

Procedure

A survey was created, using *Qualtrics* program to develop, publish and store all participant answers. At the start of the survey, participants were presented with information regarding their rights, anonymity, and the treatment data procedure. Any participant that did reject to share his anonymous answers was immediately excluded from the database. No question in this survey was mandatory (either leave it blank or answer “Don’t Know/Don’t want to answer” to ensure that participants’ will was respected. Below we describe the survey itself (more detailed in Appendix A.II.).

This survey was written and conducted in Portuguese since it was easier to apply and get a bigger sample, and was shared on social media and via email. This sharing was always accompanied by a small text explaining the theme of the survey, but never giving any information about any hypothesis, to avoid possible bias or answer deviations. The period of data collection occurred between August 5th, 2022, and August 30th, 2022.

At the beginning of the survey was a simplified explanation of Non-Fungible Tokens. This explanation was short and basic, just for the participants that were completely unfamiliar with NFTs. A more complete explanation could put at risk hypothesis x and result in more abandonments during the survey. Information regarding data treatment and anonymity was also shown at this stage, followed by an email to send possible questions related to the survey, the data, or the study itself. Before continuing to the next step,

participants had to confirm that they were 18 years old or older and that they agreed with the consent form – understanding the aim of the study, accepting data collection and analysis, and comprehending that the completion of the survey was voluntary and acknowledging that they can abandon it at any point of the survey.

Data cleaning and analysis

The data retrieved was downloaded in a format supported by Excel 2016, where all data was treated. Participants that did not accept the consent form were automatically eliminated from the sample. Participants that did not complete enough items were also eliminated.

Items with “Don’t know/Don’t want to answer” were coded as no answer to avoid interferences in the analysis.

Some items were negative and had to be reversed before analysis to get accurate values. Those items were “I2 Q16 – I would change to another brand if I experience problems with this one”, “I4 Q1 – I might rethink my allegiance to this team if this team consistently performs poorly”, “I4 Q3 – I would rethink my allegiance this team if management traded away its best players”, “I4 Q8 - I could easily be persuaded to change my favorite team preference”, and “I4 Q13 - My commitment to this team would decrease if they were performing poorly and there appeared little chance their performance would change”.

The cleaned database was opened and analyzed using *Jasp 0.16.3 software*, a free data analysis and statistical software that follows the APA regulations.

In order to analyze all the provided data, several Pearson correlations, one sample t-tests, and linear regressions were performed.

Results

It was performed a unidimensional reliability test on all previously presented indexes. All of them registered high Cronbach's α , superior to 0.81, demonstrating reliability and internal validity between the items of the indexes in question.

Table 5. Index's Cronbach's alpha

| | Brand | | Football | | Football | | Football | |
|-------------------------------------|------------------|---------------------|------------------------|--------------------------|---------------------------|---------------------------|-----------------------|-----------------------|
| Cronbach α | NFT Index | Equity Index | Brand NFT Index | Club Equity Index | Club Loyalty Index | Club Loyalty Index | Club NFT Index | Club NFT Index |
| Point estimate | 0,92 | 0,81 | 0,95 | 0,91 | 0,89 | 0,89 | 0,95 | 0,95 |
| 95% CI lower bound | 0,90 | 0,76 | 0,93 | 0,89 | 0,86 | 0,86 | 0,94 | 0,94 |
| 95% CI upper bound | 0,94 | 0,85 | 0,96 | 0,93 | 0,91 | 0,91 | 0,97 | 0,97 |

Note. Of the observations, pairwise complete cases were used.

A large part of the participants had shown a small propensity to buy or invest in *non-Fungible tokens* (M=2.35, SD=1.36), short and long-term. In terms of buying or investing in brand or football club NFTs, the index mean answers were higher (M=2.5, SD= 1.59 and M=2.44, SD= 1.69, respectively), but the one sample t-test results showed that this difference was not significant, $t(123) = 1.02$, $p=.15$ and $t(124)= .6$, $p=.26$, respectively.

Also, a t-test was applied to check possible significant mean differences between Brand Equity Index and Club Equity Index. Individuals recorded higher levels of Brand Equity (M=4.63, SD=.84), compared to their Club Equity score, $t(146)= 9.1$, $p<.001$.

Several Pearson correlations were made to estimate the correlation between variables, shown in table 6.

Table 6. Pearson's Correlations

| Variable | Index NFT | Gender | Football Club Equity Index | Football Club Loyalty Index | Football Fan | Club Fan | Football Club Nft Index |
|--------------------------------|-------------|----------|----------------------------|-----------------------------|--------------|----------|-------------------------|
| 1. Index NFT | Pearson's r | — | | | | | |
| 2. Gender | Pearson's r | 0.270 * | — | | | | |
| 3. Football Club Equity Index | Pearson's r | 0.241 | 0.248 * | — | | | |
| 4. Football Club Loyalty Index | Pearson's r | 0.113 | 0.238 | 0.692 ** | — | | |
| 5. Football Fan | Pearson's r | 0.169 | 0.371 ** | 0.667 ** | 0.601 ** | — | |
| 6. Club Fan | Pearson's r | 0.206 | 0.261 * | 0.674 ** | 0.676 ** | 0.857 ** | — |
| 7. Football Club Nft Index | Pearson's r | 0.743 ** | 0.160 | 0.457 ** | 0.304 ** | 0.297 ** | 0.320 ** |

* p < .05, ** p < .001

As seen, Football Club NFT index had significant positive correlations with the propensity to buy NFT Index, $r(118) = .74, p < .001$; with Football Club Equity Index, $r(118) = .46, p < .001$; with Football Club Loyalty Index, $r(117) = .3, p < .001$; with perception of being a football fan, $r(123) = .3, p < .001$; and with the perception of being their team's fan, $r(122) = .32, p < .001$.

Simultaneously, perceived football and club fandom also had positive correlations with loyalty towards their football club, as well as their football club equity. Gender had a significant correlation with the propensity to buy NFT Index, $r(124) = .27, p = .001$, meaning that males were more prone to buy or invest in NFTs, due to this data coding (Female=1, Male=2).

Table 7. Linear Regression r and r^2 Football Club Index

| Model Summary – Football Club NFT Index | | | | |
|--|----------|----------------------|-------------------------------|-------------|
| Model | R | R² | Adjusted R² | RMSE |
| H ₀ | 0.000 | 0.000 | 0.000 | 1.570 |
| H ₁ | 0.796 | 0.633 | 0.615 | 0.974 |

Table 8. Linear Regression ANOVA Football Club Index

| ANOVA | | | | | | |
|----------------|------------|-----------------------|-----------|--------------------|----------|----------|
| Model | | Sum of Squares | df | Mean Square | F | p |
| H ₁ | Regression | 167.074 | 5 | 33.415 | 35.253 | < .001 |
| | Residual | 96.682 | 102 | 0.948 | | |
| | Total | 263.756 | 107 | | | |

Note. The intercept model is omitted, as no meaningful information can be shown.

Table 9. Linear Regression and collinearity statistics Football Club Index

Coefficients

| Model | | Unstandardize d | Standard Error | Standardized | t | p | Collinearity Statistics | |
|----------------|--------------|--------------------|-------------------|--------------|--------|--------|----------------------------|-------|
| | | | | | | | Tolerance | VIF |
| H ₀ | (Intercept) | 2.502 | 0.151 | | 16.560 | < .001 | | |
| H ₁ | (Intercept) | -0.581 | 0.410 | | -1.418 | 0.159 | | |
| | Football Fan | -0.018 | 0.060 | -0.034 | -0.294 | 0.769 | 0.277 | 3.608 |
| | Club Fan | -0.033 | 0.071 | -0.059 | -0.471 | 0.638 | 0.226 | 4.420 |
| | Club Equity | 0.323 | 0.096 | 0.320 | 3.354 | 0.001 | 0.396 | 2.526 |
| | Club Loyalty | 0.035 | 0.108 | 0.029 | 0.323 | 0.747 | 0.461 | 2.171 |
| | Index NFT | 0.788 | 0.074 | 0.672 | 10.606 | < .001 | 0.895 | 1.118 |

A multiple regression was carried out (table 7, 8, and 9) to investigate whether Football Fandom, Club Fandom, perceived Club Equity, Club Loyalty, and NFT Index could significantly predict Football Club's NFT Index. The results of the regression indicated that the model explained 61.5% of the variance and that the model was a significant predictor of intention to buy or invest in Football Club NFT, $F(5,102) = 35,25$, $p < .001$. The NFT Index significantly contributed to the model ($B=.79$, $p<.001$), as well as Club Equity ($B=.32$, $p=.001$). Football Fan ($B=-.02$, $p=.77$), Club Fan ($B=-.03$, $p=.64$), and Club Loyalty ($B=.04$, $p=.75$) did not contribute significantly to the model. There were no significant collinearity statistics to be corrected.

Table 10. Linear Regression r and r^2 Brand NFT Index

Model Summary - Brand NFT Index

| Model | R | R ² | Adjusted R ² | RMSE |
|----------------|-------|----------------|-------------------------|-------|
| H ₀ | 0.000 | 0.000 | 0.000 | 1.524 |
| H ₁ | 0.736 | 0.542 | 0.534 | 1.041 |

Table 11. Linear Regression ANOVA Brand NFT Index

ANOVA

| Model | | Sum of Squares | df | Mean Square | F | p |
|----------------|------------|----------------|-----|-------------|--------|--------|
| H ₁ | Regression | 139.858 | 2 | 69.929 | 64.576 | < .001 |
| | Residual | 118.036 | 109 | 1.083 | | |
| | Total | 257.894 | 111 | | | |

Note. The intercept model is omitted, as no meaningful information can be shown.

Table 12. Linear Regression and collinearity statistics Brand NFT Index

Coefficients

| Model | | Unstandardized | Standard Error | Standardized | t | p | Collinearity Statistics | |
|----------------|--------------|----------------|----------------|--------------|--------|--------|-------------------------|-------|
| | | | | | | | Tolerance | VIF |
| H ₀ | (Intercept) | 2.512 | 0.144 | | 17.442 | < .001 | | |
| H ₁ | (Intercept) | -0.565 | 0.562 | | -1.005 | 0.317 | | |
| | Brand Equity | 0.257 | 0.121 | 0.140 | 2.125 | 0.036 | 0.961 | 1.041 |
| | NFT Index | 0.802 | 0.076 | 0.696 | 10.522 | < .001 | 0.961 | 1.041 |

A multiple regression was carried out to investigate whether Brand Equity Index and NFT Index could significantly predict Brand NFT Index. The results of the regression indicated that the model explained 53.4% of the variance and that the model was a significant predictor of intention to buy or invest in Brand NFT, $F(2,109) = 64,58$, $p < .001$.

NFT Index significantly contributed to the model ($B=.8$, $p<.001$). Brand Equity ($B=.26$, $p<.05$) also contributed significantly to the model. There were no significant collinearity statistics to be corrected.

Even though our t-test did not reveal any significant differences in the sample between NFT Index, Brand NFT Index, and Football Club NFT Index means in the total sample, we tested if there could be differences between males and females.

Female participants reported a higher interest in buying an NFT from their chosen brand ($M= 2.37$, $SD=1.41$) than the interest they have in NFTs in general, $t(68)=1.94$, $p <.05$. No differences were obtained for male participants.

Participants who scored high values on Football Club NFT Index, ≥ 4 , also recorded a significantly higher propensity to buy football club NFTs ($M= 5.06$, $SD= .99$) than to buy NFTs in general ($M=3.05$, $SD=1.68$), $t(25)= 10.3$, $p <.01$. These participants also recorded a significantly higher propensity to buy brand NFTs ($M= 4.65$, $SD= 1.4$) than to buy NFTs in general, $t(25)= 5.8$, $p <.01$. No differences were obtained for individuals with low values on Football Club Index ($4<$).

Discussion

This study's results showed that football team equity had a strong significant positive correlation with Football Club NFT Index. These results are in line with previous literature since a high team brand equity can result in a preference against other brands (or non-brand products) and also in a higher sense of positive differentiation of the team (Guenzi and Nocco, 2006). It was also confirmed, in our study, the tendency to buy NFT, had a significant correlation with the tendency to buy their football teams' related NFT. Both these variables, NFT Index and Brand Equity Index, significantly contributed to the regression analysis model of the variance on the variable Football Club NFT Index.

Participants' scores of self-reported football and club fandom significantly correlate with how prone they were to buy their football teams' NFTs. Both of these results were expected when compared to previous literature that states that sports NFTs interest, usually is related to social interest towards collectibles (Trautman, 2021).

Fan loyalty towards the individuals' football team also had a strong significant positive correlation with the proneness to buy that team's NFT, staying in line with previous literature that stated that a loyal fan consistently has favorable attitudes towards the team and it will lead to increased consumption of their products (Mahony et al., 2000). Also, as pointed out previously, high brand loyalty gives clubs the possibility to go beyond their core product, since fans will acquire those (Gladden et al., 2001), possibly creating good revenues from these non-core products, like NFTs.

Even though men had higher means in the tendency to buy NFTs, club equity, club loyalty, and perceived fandom towards football and their club, gender differences were not significant regarding their football teams' NFTs. More on the gender analysis, the only significant difference found was that females were more prone to buy a brand NFT ($M=2.37$, $SD=1.41$) than to invest in NFTs in general, $t(68)=1.94$, $p<.05$.

In the grand scheme, the intention to buy brand NFTs and football club NFTs had almost no significant differences between them and had similar means and evolutions. Brand equity and football club equity, however, had significant differences, where participants recorded higher brand equity than football club equity, even though they don't

intend to buy or invest in brand NFTs significantly more than they intend to buy or invest in football club NFTs.

In this study, individuals with high scores on Football Club NFT Index were significantly more prone to invest in NFTs of their club and their brand of choice, than in NFTs in general, but individuals with low scores on that Index were even more reserved in investing in their clubs' or brand of choice NFTs, than a regular NFT. This could suggest that a low tendency to buy NFTs is a better predictor that an individual will not buy any kind of NFT than a higher tendency to buy NFT is a predictor of an individual buying NFTs of something they value or are loyal to.

Participants were keener to invest in their football teams' NFTs as a way of short or long-term investment than from a collectible perspective, focusing more on their functional needs than the symbolic ones (Keller, 1993).

Limitations

Firstly, due to being an online survey, it was really difficult to ensure that everyone read all instructions and explanations regarding the survey itself and NFTs in particular. This became apparent when the majority of participants answered with a low score when asked about their knowledge of NFTs ($M=3.84$, $SD=2.34$), a lot of participants had taken a really small amount of time to complete the survey, and many "Don't Know/Don't want to answer" when the questions were related to NFTs.

Better examples of possible uses of football NFTs should also be given, for the participants to realize their possible utilities and possibly their potential.

Even though the Portuguese language was chosen to simplify the application and divulgation of the survey, it contributed to a lack of international participants. The scope of this study ended up being the Portuguese case towards football NFT buying, nevertheless, it would be compelling to understand this phenomenon in other countries.

The brand's chapter of the survey should have featured a brand loyalty scale as well, to understand the direct effect of both brand equity and loyalty on the propensity to buy brand NFTs and understand if there is a difference when compared with football clubs' equity, loyalty and NFT buying. This would possibly explain why the significant

difference in brand equity compared to brand loyalty was not reflected in a higher intention to buy in brand NFTs, compared to football club ones.

Future recommendations

Future researchers could explore other methodologies to ensure that all participants clearly understand all instructions and read every piece of information. A brief video explaining everything, or a pre-survey quiz related to the information previously stated could be a good way to identify who followed the instructions. For a better understanding of NFTs' possible utility, a description of *Sorare*, *Socios*, and *NBA Top Shot* platforms and their NFT solutions, similar to the one in the literature review, could serve as an objective example to give. This way, participants would be more informed when answering the survey.

Results from international populations could be interesting to understand the role of culture on the propensity to buy football NFTs, as well as understand how the contributions of this study, regarding Portugal and Portuguese-speaking people, stand when compared to other countries about this thematic.

With environmental changes regarding NFT minting and selling, it could be interesting for future researchers to understand how that influenced NFT enthusiasts and if it has sale and popularity effects. Although around 84% of the Americans who are familiar with and invest regularly in cryptocurrency, do not believe that cryptocurrencies are a threat to the environment, 65% of them say they would reconsider changing their investments if they found out that cryptocurrency has a massive carbon footprint, with Gen Y participants reaching 71% (Duggan, 2022). Could this be beneficial to the NFTs market?

Conclusion

In such a competitive and money-moving market, such as the Sports Industry, any type of sign or advantage over your competitors, or even a right anticipated prediction, could be the key between success and failure. With many uncontrollable factors that could disrupt their core product and drastically change their performance, club managers need to be one step ahead.

This dissertation aimed to understand the role of club equity and loyalty and acknowledge how these factors and which others contribute to individuals' tendency to buy their teams' NFTs, possibly generating stable incoming in years of unstable performances.

This study brings contributions to the previous literature, helping to understand in an objective and scientific way, the potential of the NFT market in the Sports Industry. Sports, more specifically, football teams could enter this growing and sub-explored World, that already moves billions of euros in transactions, but it is crucial to know what influences fans to invest.

Football teams' managers must focus on their teams' marketing and fans. Previous literature indicated that high levels of brand equity and brand loyalty would make their fans permanent in such a changing environment, since fans would care more about non-product-related brand attributes, such as tradition, history, etc., instead of their teams' performance on the pitch. If accomplished, high team equity and fan loyalty would result in a fan's preference towards these team, as well as a bigger tendency to buy non-core products of the team, and a bigger fandom internationally. These factors, plus fans' social need for group identification and football collectible growing culture, could contribute to a successful entry into the NFT market for the football clubs.

This study brings to light that football and football club perceived fandom, perceived football club equity, and fan loyalty towards favorite football club all have strong positive correlations with the intention to buy or invest in favorite football teams' NFTs. Also, the intrinsic individual propensity to buy or invest in regular NFTs has a positive significant correlation with the intention to buy or invest in favorite football teams' NFTs.

A fan who owns a football team's NFT, has a sense of identity and belonging that would, once again, contribute to an increase in his fan loyalty towards them, thus, fortifying their fan-team relation.

Nothing in this study can be considered financial advice.

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Appendix A

I. Instructions and Consent Form

É convidado a participar neste estudo relacionado com a relevância das criptomoedas e dos NFT's e sua associação com grandes marcas mundiais. Este projeto será conduzido conforme as normas do mestrado de Psychology in Business and Economics da Universidade Católica Portuguesa.

Para entender o que é um NFT (*non-fungible token* ou *token* não fungível), é preciso entender o que significa fungível. Fungível é algo que pode ser substituído por algo do mesmo género, quantidade ou qualidade. Um NFT é não-fungível pois é único.

Assim, um NFT é como um certificado de autenticidade e pertença de algo único no Mundo. Quem tem um NFT, é o único proprietário daquele pedaço digital.

Certamente, estará familiarizado com pessoas que fazem coleções de cromos. Cromos físicos de jogadores de futebol, como o Cristiano Ronaldo, já foram vendidos por centenas de milhares de euros. Aqui, o cenário é semelhante, apenas inserido no Mundo digital e com certificados de autenticidade do produto para garantir que é único e verdadeiro.

Ao contrário das criptomoedas que costumam ser compradas apenas como investimento ou moeda de troca, os NFT's também o podem ser, mas juntam a dimensão de serem adquiridos com intenções de coleção própria.

Este questionário demorará, em média, entre 10~15 minutos. Não há respostas certas nem erradas, apenas é pedido honestidade. Relembro que a sua participação é totalmente voluntária e que pode abandonar o questionário a meio caso não se sinta confortável com o mesmo, sem qualquer consequência.

Os dados recolhidos permanecerão anónimos e apenas utilizados para questões académicas.

Qualquer dúvida que tenha consoante o estudo ou o tratamento dos dados, contacte o email: bfsnunes@ucp.pt.

Muito obrigado pela sua participação

II. Survey items (in italic reverse-scored items)

Li atentamente a introdução do questionário? Sim/Não

Tenho idade superior a 18 anos? Sim/Não

Entendi que os meus dados irão permanecer anónimos e permito o seu uso para armazenamento e estudo futuros? Sim/Não

Aceito participar neste estudo? Sim/Não

Qual a sua idade? _____

Qual o seu género?

Masculino

Feminino

Outro _____

Não responde

De seguida, responda às seguintes questões sobre NFT's e criptomoedas.

Avalie o seu conhecimento prévio relativo a criptomoedas. (1~10)

Avalie o seu conhecimento prévio relativo a NFT's, *non-fungible tokens*. (1~10)

Siga a escala (1- Discordo totalmente / 7 – Concordo totalmente) para responder às seguintes questões:

Irei investir em criptomoedas no futuro.

Irei comprar um NFT no futuro.

Compraria um NFT para investimento a curto-prazo.

Compraria um NFT para investimento a longo-prazo.

Compraria um NFT para vender futuramente.

Compraria um NFT para coleção própria.

Compraria um NFT com intenção de ficar com ele para mim.

Indique uma marca que aprecie e que considere ser das maiores e mais respeitadas a nível Mundial.

R: _____

Esta marca será referida como “Marca X” durante o resto do questionário.

De seguida, responda às seguintes questões sobre a “Marca X”. Siga a escala (1- Discordo totalmente / 7 – Concordo totalmente)

Esta marca tem equipamentos modernos.

As instalações desta marca são atrativas visualmente.

Esta marca tem lojas visivelmente atrativas no seu interior.

Os trabalhadores desta marca ouvem-me.

Os trabalhadores desta marca são úteis.

Os trabalhadores desta marca são simpáticos.

O consumidor habitual desta marca tem uma imagem semelhante à que eu considero ter.

A imagem desta marca é consistente com o que gosto de ver numa marca.

A imagem desta marca é consistente com o que gosto que os outros vejam em mim.

Quando falo desta marca, habitualmente uso um “nós” e não um “eles”.

Se existir uma critica nos media a esta marca sentir-me-ei embaraçado.

Quando alguém critica esta marca, sinto como um insulto pessoal.

Esta marca reflete o meu estilo de vida.

Recomendaria esta marca a alguém que me pedisse conselhos.

Da próxima vez que necessitar de produtos da área, irei escolher esta marca.

Irei mudar para outra marca caso experiencie um problema com esta.

Indique agora o clube de futebol que apoia.

R: _____

Esta clube será referida como “Clube X” durante o resto do questionário.

Quão fã de futebol se considera? (0~10)

Quão fã desta equipa se considera? (0~10)

De seguida, responda às seguintes questões sobre o “Clube X”. Siga a escala (1- Discordo totalmente / 7 – Concordo totalmente)

As instalações deste clube são atrativas visualmente.

Este clube tem lojas visivelmente atrativas no seu interior.

O fã deste clube tem uma imagem semelhante à que eu considero ter.

A imagem deste clube é consistente com o que gosto de ver numa marca.

A imagem deste clube é consistente com o que gosto que os outros vejam em mim

Quando falo deste clube, habitualmente uso um “nós” e não um “eles”.

Se existir uma critica nos media a este clube sentir-me-ei embaraçado.

Quando alguém critica este clube, sinto como um insulto pessoal.

Este clube reflete o meu estilo de vida.

Talvez reconsidere a minha ligação a este clube caso a sua performance seja constantemente negativa

Eu vejo jogos do meu clube independentemente do adversário.

Eu reconsideraria a minha ligação ao clube caso a direção vendesse os melhores jogadores.

Ser fã deste clube é importante para mim.

Nada conseguiria mudar o meu apoio a este clube.

Sou um fã dedicado deste clube.

Não iria afetar a minha lealdade a este clube caso a direção contratasse um treinador que eu desgosto bastante.

Facilmente seria persuadido a mudar de clube.

Sou fã deste clube desde que comecei a acompanhar futebol.

Nunca conseguiria mudar de clube, mesmo que todos os meus amigos fossem fãs de outro clube.

Seria improvável passar a apoiar outro clube de futebol.

Seria muito improvável mudar as minhas crenças em relação a este clube de futebol.

Consegues perceber muitas coisas numa pessoa só pela sua vontade de se manter fã de um clube que tem performances negativas consecutivamente.

A minha dedicação para com o clube ia decrescer caso tivessem performances negativas constantemente e houvesse poucas hipóteses de reverter isso.

Imagine o cenário em que a “Marca X” e o “Clube X” lançam NFT’s. Siga a escala (1-1-Discordo totalmente / 7 – Concordo totalmente)

Compraria um NFT da “Marca X”.

Compraria um NFT da “Marca X” para investimento a curto-prazo.

Compraria um NFT da “Marca X” para investimento a longo-prazo.

Compraria um NFT da “Marca X” para vender futuramente.

Compraria um NFT da “Marca X” para coleção própria.

Compraria um NFT da “Marca X” com intenção de ficar com ele para mim.

Compraria um NFT do “Clube X”.

Compraria um NFT do “Clube X” para investimento a curto-prazo.

Compraria um NFT do “Clube X” para investimento a longo-prazo.

Compraria um NFT do “Clube X” para vender futuramente.

Compraria um NFT do “Clube X” para coleção própria.

Compraria um NFT do “Clube X” com intenção de ficar com ele para mim.

Appendix B

Descriptive Statistics

Table B.1. *Participants by age group*

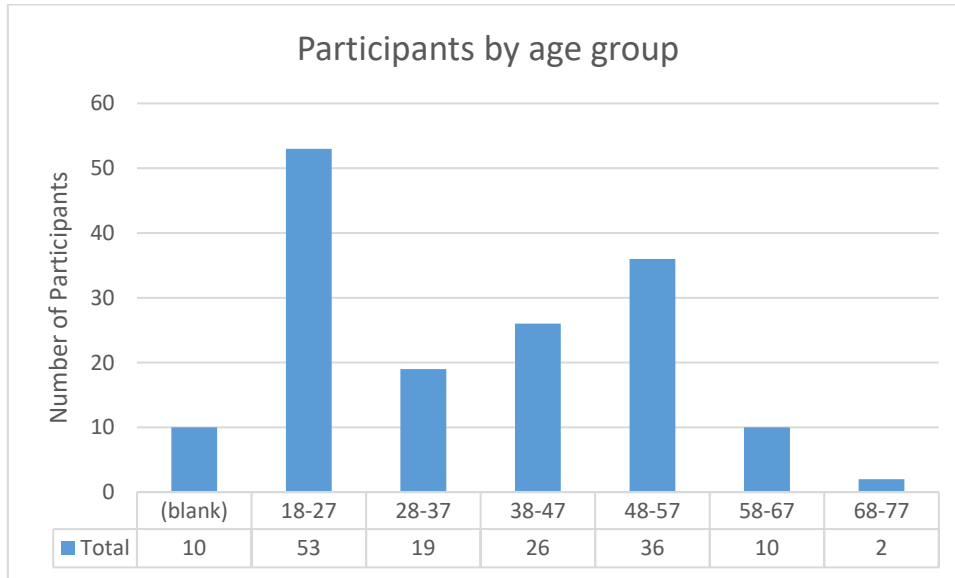


Table B.2. *Different NFTs propensity to buy descriptive statistics*

| | Index NFTs | Index brand NFTs | Index football club NFTs |
|----------------|-------------------|-------------------------|---------------------------------|
| Valid | 144 | 124 | 125 |
| Missing | 12 | 32 | 31 |
| Mean | 2.35 | 2.5 | 2.44 |
| Std. Deviation | 1.36 | 1.59 | 1.69 |

Table B.3. *Brand Equity, Club Equity and Brand Loyalty index's statistics*

| | Index Brand Equity | Index Club Equity | Index Club Loyalty |
|----------------|---------------------------|--------------------------|---------------------------|
| Valid | 146 | 135 | 132 |
| Missing | 10 | 21 | 24 |
| Mean | 4.63 | 4 | 5.03 |
| Std. Deviation | 0.84 | 1.56 | 1.31 |

Table B.4. *Descriptive statistics of buying an NFT for his functional benefit and buying and NFT for his symbolic benefit*

| | Functional Benefit Index | Symbolic Benefit Index |
|----------------|---------------------------------|-------------------------------|
| Valid | 124 | 123 |
| Missing | 32 | 33 |
| Mean | 2.57 | 2.19 |
| Std. Deviation | 1.71 | 1.68 |

Table B.5. *Index's descriptive statistics just for female participants*

| | NFT Index Brand | NFT Index Football Club | NFT Index |
|----------------|------------------------|--------------------------------|------------------|
| Valid | 81 | 69 | 70 |
| Missing | 9 | 21 | 20 |
| Mean | 2.04 | 2.37 | 2.23 |
| Std. Deviation | 1.03 | 1.41 | 1.39 |

Table B.6. *Descriptive statistics for individuals who scored equal or over 4 in Football Club NFT Index*

| | NFT Index | Brand NFT Index | Football Club NFT Index |
|----------------|------------------|------------------------|--------------------------------|
| Valid | 51 | 26 | 26 |
| Missing | 6 | 31 | 31 |
| Mean | 3.05 | 4.6 | 5.06 |
| Std. Deviation | 1.68 | 1.4 | 0.99 |

Table B.7. *Descriptive statistics for individuals who scored under 4 in Football Club NFT Index*

| | Brand NFT Index | Football Club NFT Index | NFT Index |
|----------------|------------------------|--------------------------------|------------------|
| Valid | 98 | 99 | 93 |
| Missing | 1 | 0 | 6 |
| Mean | 1.93 | 1.75 | 1.96 |
| Std. Deviation | 1.06 | 0.88 | 0.95 |
| Minimum | 1 | 1 | 1 |
| Maximum | 4.67 | 3.67 | 4.67 |

Appendix C

Cronbach's alpha

Table C.1. *NFTs Index Cronbach's alpha*

Frequentist Scale Reliability Statistics

| Estimate | Cronbach's α |
|--------------------|---------------------|
| Point estimate | 0.920 |
| 95% CI lower bound | 0.899 |
| 95% CI upper bound | 0.937 |

Note. Of the observations, pairwise complete cases were used.

Table C.2. *Brand Equity Index Cronbach's alpha*

Frequentist Scale Reliability Statistics

| Estimate | Cronbach's α |
|--------------------|---------------------|
| Point estimate | 0.811 |
| 95% CI lower bound | 0.764 |
| 95% CI upper bound | 0.850 |

Note. Of the observations, pairwise complete cases were used.

Table C.3. *Club Equity Index Cronbach's alpha*

Frequentist Scale Reliability Statistics

| Estimate | Cronbach's α |
|--------------------|---------------------|
| Point estimate | 0.907 |
| 95% CI lower bound | 0.885 |
| 95% CI upper bound | 0.926 |

Note. Of the observations, pairwise complete cases were used.

Table C.4. *Club Loyalty Index Cronbach's alpha*

Frequentist Scale Reliability Statistics

| Estimate | Cronbach's α |
|--------------------|---------------------------------------|
| Point estimate | 0.890 |
| 95% CI lower bound | 0.864 |
| 95% CI upper bound | 0.912 |

Note. Of the observations, pairwise complete cases were used.

Table C.5. *Brand NFT Index Cronbach's alpha*

Frequentist Scale Reliability Statistics

| Estimate | Cronbach's α |
|--------------------|---------------------------------------|
| Point estimate | 0.946 |
| 95% CI lower bound | 0.931 |
| 95% CI upper bound | 0.958 |

Note. Of the observations, pairwise complete cases were used.

Table C.6. *Football Club NFT Index Cronbach's alpha*

Frequentist Scale Reliability Statistics

| Estimate | Cronbach's α |
|--------------------|---------------------------------------|
| Point estimate | 0.954 |
| 95% CI lower bound | 0.941 |
| 95% CI upper bound | 0.965 |

Note. Of the observations, pairwise complete cases were used.

Table C.7. *Functional Benefit Index Cronbach's alpha*

Frequentist Scale Reliability Statistics

| Estimate | Cronbach's α |
|--------------------|---------------------------------------|
| Point estimate | 0.929 |
| 95% CI lower bound | 0.907 |
| 95% CI upper bound | 0.947 |

Note. Of the observations, pairwise complete cases were used.

Table C.8. *Symbolic Benefit Index Cronbach's α*

Frequentist Scale Reliability Statistics

| Estimate | Cronbach's α |
|--------------------|---------------------------------------|
| Point estimate | 0.993 |
| 95% CI lower bound | 0.990 |
| 95% CI upper bound | 0.995 |

Note. Of the observations, pairwise complete cases were used.

Appendix D

Brand Equity Pearson's Correlation

Table D.1. *Brand Equity Pearson's correlation*

| Variable | | Gender | NFT Index | Brand Equity Index | Brand NFT Index |
|-----------------------|-------------|--------|-----------|--------------------|-----------------|
| 1. Gender | Pearson's r | — | | | |
| 2. NFT Index | Pearson's r | 0.270 | — | | |
| 3. Brand Equity Index | Pearson's r | -0.114 | 0.154 | — | |
| 4. Brand NFT Index | Pearson's r | 0.099 | 0.748 ** | 0.278 * | — |

* $p < .05$, ** $p < .001$

▪

Appendix E

T-tests

Table E.1. *One Sample T-test results NFTs (compared with NFT Index)*

| | t | df | p | Mean Difference | 95% CI for Mean Difference | | Cohen's d |
|----------------------------|-------|-----|-------|--------------------|-------------------------------|-------|--------------|
| | | | | | Lower | Upper | |
| | | | | | Brand NFT Index | 1.023 | |
| Football Club NFT Index | 0.632 | 124 | 0.264 | 0.092 | -0.148 | ∞ | 0.057 |

Note. For the Student t-test, effect size is given by Cohen's *d*.

Note. For the Student t-test, the alternative hypothesis specifies that the mean is greater than 2.35.

Table E.2. *Brand Equity Index t-test, compared with Club Equity*

| | t | df | p | Mean Difference | 95% CI for Mean Difference | | Cohen's d |
|--|---|----|---|--------------------|-------------------------------|-------|--------------|
| | | | | | Lower | Upper | |
| | | | | | Brand Equity Index | 9.095 | |

Note. For the Student t-test, effect size is given by Cohen's *d*.

Note. For the Student t-test, the alternative hypothesis specifies that the mean is greater than 4.

Table E.3. *T-test female participants (compared with NFT index)*

| | t | df | p | Mean Difference | 95% CI for Mean Difference | | Cohen's d |
|----------------------------|-------|----|-------|--------------------|-------------------------------|-------|--------------|
| | | | | | Lower | Upper | |
| Brand NFT Index | 1.937 | 68 | 0.028 | 0.329 | 0.046 | ∞ | 0.233 |
| Football Club NFT Index | 1.120 | 69 | 0.133 | 0.186 | -0.091 | ∞ | 0.134 |

Note. For the Student t-test, effect size is given by Cohen's *d*.

Note. For the Student t-test, the alternative hypothesis specifies that the mean is greater than 2.04.

Table E.4. *T-test for individuals who scored equal or over 4 in Football Club NFT Index*

| | t | df | p | Mean Difference | Cohen's d |
|-------------------------|--------|----|--------|-----------------|-----------|
| Football Club NFT Index | 10.297 | 25 | < .001 | 2.008 | 2.019 |
| Brand NFT Index | 5.804 | 25 | < .001 | 1.598 | 1.138 |

Note. For the Student t-test, effect size is given by Cohen's *d*.

Note. For the Student t-test, the alternative hypothesis specifies that the mean is greater than 3.05.

-

Table E.5. *T-test for individuals who scored under 4 in Football Club NFT Index*

| | t | df | p | Mean Difference | Cohen's d |
|-------------------------|----------|-----------|----------|------------------------|------------------|
| Brand NFT Index | -0.322 | 97 | 0.626 | -0.035 | -0.032 |
| Football Club NFT Index | -2.334 | 98 | 0.989 | -0.206 | -0.235 |

Note. For the Student t-test, effect size is given by Cohen's *d*.

Note. For the Student t-test, the alternative hypothesis specifies that the mean is greater than 1.96.