



Behind the bubble: Exploring the motivations of NFT buyers

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ABSTRACT

Non-fungible tokens (NFTs) represent a multibillion-dollar global market. While considerable speculation exists about the future utility of NFTs, there has been limited research into the consumer behaviors of market participants. This research paper examines the motivations of NFT buyers through the lens of self-determination theory. Using a sample of 482 participants, the authors tested a conceptual framework to better understand both NFT buyers' intrinsic and extrinsic motivations. This study expands the literature on NFTs in three different ways: i) it is the first study, as far as we know, to focus exclusively on NFT buyers and their motivations in purchasing NFTs; ii) it explores a variety of potential motivations theorized in the literature; and iii) it tests the expected future value of NFTs as both a motivation and as a moderator for NFT buyers. The authors determined that intrinsic motivation had the most substantial effect on purchase intention, and the expectations of NFTs' future value positively moderated the effect of amotivation on purchase intention. In contrast, high expectations of future value moderated the effect of external regulation on purchase intention. The results suggest that NFT buyers are not as impacted by potential social or monetary gain as often characterized in the academic literature but behave more like traditional buyers of luxury goods.

1. Introduction

Non-fungible tokens (NFTs) represent an emerging form of digital items traded in a global marketplace. Since their invention in 2017, NFTs have evolved from a cryptocurrency feature into a 24/7 global consumer market comprised of art, collectibles, music and so on, worth over USD 12B in annual trading volume at its peak in January 2022 (Aharon and Demir, 2022; Dowling, 2022a; Umar et al., 2022).

This is surprising as NFTs are challenging to purchase, requiring several highly technical, pre-meditated steps (Bhujel & Rahulamathavan, 2022; He et al., 2022; Zarifis & Castro, 2022). Though every NFT transaction is public and perfectly traceable (Chen & Omote, 2022; Kavitha et al., 2022; Nakavachara & Saengchote, 2022), fraud remains rampant because many NFT projects exist solely to fleece initial buyers of their digital assets (Huang et al., 2023; He et al., 2022; Kshetri, 2022). Even when NFT projects are legitimate, the vast majority of projects fail, losing their purchase value within weeks, never to be resold (Nadini et al., 2021; Venz, 2022). Finally, the NFT market experienced its first bubble from 2017 to 2019 (Jiang & Liu, 2021), falling so rapidly that "the average sale (USD) at the beginning of 2020 was close to zero" (Vidal-Tomás, 2023). Yet, buyers continue to purchase NFTs. What

explains their commitment to this seemingly risky behavior?

Primarily rooted in self-determination theory (SDT), this study sheds light on buyer motivation in the NFT market, utilizing the Situational Intrinsic and Extrinsic Motivation Scale (SIMS), and has implications for the broader NFT market phenomenon in general. Given the varied explanations in the existing body of research, this study utilized the Situational Intrinsic and Extrinsic Motivation Scale (SIMS) to measure four distinct motivations defined by SDT: intrinsic motivation, identified regulation, external regulation, and amotivation (Guay et al., 2000).

To address the question of why consumers buy NFTs, we developed a novel conceptual model and conducted a study of NFT buyers ($n = 482$) on self-reported interest in and future expectations of NFTs from March to May 2023. The aim of this research is three-fold: i) to identify specific motivations that may support and explain the purchase intention of NFT buyers; ii) to explore the differences between intrinsic and extrinsic motivations for the purchase intention of NFT buyers; and iii) to examine the influence of expectations regarding the future value of NFTs on the relationships between the specific motivations and the purchase intention of NFT buyers.

We empirically validate our model through a quantitative partial least squares/structural equation modeling (PLS-SEM) technique. Our

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findings reveal that expectations of NFTs' future value and specific dimensions of motivation positively or negatively impact NFT buyers' purchase intention. Additionally, expectations of NFTs' future value were moderated by some, but not all, dimensions of motivation.

This paper provides three contributions to the literature. First, we propose a new theoretical model of NFT buyer motivation. Motivations behind digital purchases are of particular interest since such purchases are entirely self-directed, without the involvement of a sales agent. A variety of theoretical models exist concerning motivations for online purchase behavior (e.g., Close & Kukar-Kinney, 2010; Shang et al., 2005; Veronika, 2013) as well as purchase intention (e.g., Animesh et al., 2011; Bian & Forsythe, 2012; Jalilvand & Samiei, 2012). Previous studies of NFT buyers have approached this topic by focusing on attitudes toward the purchasing process (Yilmaz et al., 2023) or the trust required to acquire the underlying crypto assets (Zarifis & Castro, 2022), or by studying specific assets, such as metaverse land (Ante et al., 2023). This study is uniquely focused on the motivations of NFT buyers and on studying their antecedents.

Second, we contribute to the emerging field of NFT research by focusing on a critical actor in the market ecosystem, the NFT buyer. Prior work has focused on NFT asset pricing as an investment class (e.g., Ko et al., 2022; Umar et al., 2022; J. Wang et al., 2023) or the future promise of applied NFT technology in various fields (e.g., Hamledari & Fischer, 2021; Manzoor et al., 2020; Zhan et al., 2023). While the inefficiency of NFT price setting has been studied (Aharon & Demir, 2021; Dowling, 2021a) as well as the role speculation plays in NFT prices (Vidal-Tomás, 2022; Y. Wang et al., 2022), little direct research has focused on the participants who ultimately set market prices. Unlike other markets, NFT buyers play an active role in pricing assets, initially when they buy an NFT and subsequently when they sell an asset (Baals et al., 2022; Malik et al., 2023). Thus, our research adds to the growing literature on the economic activity of the NFT market (e.g., Nadini et al., 2021; Pinto-Gutiérrez et al., 2022; Wilkoff & Yildiz, 2023).

Third, we view NFTs as digital versions of luxury goods and, thus, full of potential implications for future researchers and practitioners in the field. Indeed, luxury brands have been some of the first to dabble in NFTs, with varying degrees of success (Joy et al., 2022). This research should interest those wishing to understand the opportunities and challenges in enticing NFT buyers to participate in a new project.

2. Literature review

While a significant body of literature exists on cryptocurrency, NFT research is still nascent (e.g., Baek et al., 2022; Nadini et al., 2021; Taherdoost, 2023). Although online purchase intentions have been studied for decades (e.g., Animesh et al., 2011; Koufaris, 2002; Shang et al., 2005), there is a lack of research on buying and transferring digital goods (Hamari & Keronen, 2017; Ritterbusch & Teichmann, 2023) and on research concerning personal motivations behind self-directed consumer behavior (Paul, 2015, 2019; Shahid & Paul, 2021; Tsai, 2005). Given the rapid and significant growth of the NFT market, researchers have questioned the motivations behind NFT transactions, especially since market participants buy and sell anonymously (Bao & Roubaud, 2022; Chowdhury et al., 2023; Dwivedi et al., 2022; Yilmaz et al., 2023).

An optimistic view suggests that NFT buyers are fan enthusiasts, and NFTs are collectibles that represent the future of marketing. The volatility of NFT prices is typical of the early adoption phases of new technology (Chohan & Paschen, 2021; W. Lee & Cha, 2023; Özkaynar, 2022; Zaucha & Agur, 2022). More financially oriented researchers believe that NFT purchases are speculative investments whose volatility is exacerbated by NFTs' denomination in cryptocurrency and whose prices may be manipulated by bad actors (Anselmi & Petrella, 2023; Apostu et al., 2022; Chalmers et al., 2021; Dowling, 2022b; Vidal-Tomás, 2022, 2023). Others posit that NFT buyers are driven by a herd mentality or "fear of missing out" (FOMO), as seen in other digital assets (Bao et al., 2023; Karkkainen, 2021; Lyócsa et al., 2022; Mamidala & Kumari, 2023;

Ozdemir & Kumar, 2023; Yousaf & Yarovaya, 2022a). Finally, NFT buyers could simply be stuck trading crypto assets within the cryptocurrency ecosystem, continuing to purchase NFTs out of a stubborn nihilism (Allen & Potts, 2023; Chohan, 2022; Dowling, 2022a).

Given these varied explanations, there have been calls for specific research into NFT buyers' continued participation in such speculative market behavior (Bao & Roubaud, 2022; Prasad et al., 2023), as well as a general call to explore the motivations behind the purchase behavior of NFT buyers (Baklanova et al., 2023; Dwivedi et al., 2022; W. Lee & Cha, 2023; Xie et al., 2023; Yilmaz et al., 2023).

2.1. Definitions related to NFTs

For this paper, we will refer to several specific aspects of NFTs, which we define as follows: *blockchain*, *non-fungible token (NFT)*, *NFT project*, *minting*, *wallet*, *gas fees*, and *Ethereum*. A blockchain can be defined as a public, immutable ledger that records transactions and secures trackable assets using cryptographic computations (Franceschet, 2021). Blockchains operate as shared databases of the transactions undertaken (Nakamoto, 2008) and are often public to provide transparency into these transactions. A non-fungible token (NFT) is a unique item with specific, non-repeatable attributes that lives in a cryptocurrency-based blockchain and can be bought and sold on a public platform any time (Ali & Bagui, 2021; Chalmers et al., 2021; Wilson et al., 2021). An NFT project is composed of a group of NFT items from the same creator whose attributes vary within a defined limit, implying the rarity of certain attributes over others. One of the earliest and best known NFT projects is CryptoPunks, where 10,000 24x24 pixel artworks were algorithmically created. These "punks" have observable variances between them – e.g. presenting male or female, smoking a cigarette, wearing sunglasses, etc. – such that no two are the same (J. Wang et al., 2023). Inspired by CryptoPunks, NFT projects often run in lots of 10,000, released all at once in a new smart contract (Bruschi et al., 2022). Minting is the act of an NFT creator directly originating a new NFT and setting up the process ready for purchase, often at a nominal price. NFTs can be combined into a collection but, once all are minted in a project, new NFTs cannot be added (Wilson et al., 2021). If a project mints its entire run, NFT creators often turn to creating new, related NFT projects, which can be understood as brand extensions of the original. For example, the very successful Bored Ape Yacht Club (BAYC) sold out of its original 10,000 items and to onboard more buyers into their ecosystem, launched its derivative 20,000 item Mutant Ape Yacht Club at a lower price point than what a BAYC sold for (Brouard, 2024).

A wallet is a semi-public storage mechanism for NFTs and cryptocurrencies. Anyone can observe the transactions interacting in a wallet – for example, buying and selling NFTs and cryptocurrency – but cannot positively identify the owner because buyers may own multiple wallets. Gas fees refer to the transaction fees paid to network participants ("miners") who provide computational resources needed to ensure the integrity of the blockchain. To purchase, list, or sell an NFT requires a gas fee because these transactions must be secured on the blockchain network (Murray et al., 2022). Finally, Ethereum is the most popular cryptocurrency for NFTs; the authors of the Ether blockchain developed the specific protocol and software that created NFTs in the first place (Entriken et al., 2018).

2.2. The NFT market

The NFT market has undergone two distinct periods of rapid growth and decline. The first, from 2017 to 2019, was driven exclusively by early cryptocurrency adopters because buying, storing, and spending cryptocurrencies required even more sophisticated technical knowledge than it does today (Jiang & Liu, 2021). The second wave, from 2020 to its peak in January 2022, correlated strongly with COVID-19 lockdowns and appeared to be driven by consumer adoption of digital wallets from for-profit companies, such as Coinbase (Ghosh et al., 2023; Y. Wang

et al., 2022; White et al., 2022). Fig. 1 illustrates this growth by visualizing the monthly volumes on the largest NFT marketplace, OpenSea (Cho et al., 2024).

Both periods have been criticized as speculative bubbles (Flick, 2022; Griffin, 2023; Pinto-Gutiérrez et al., 2022). Such criticism assumes that NFT buyers are primarily motivated by financial goals and, yet, unlike the derivative cryptocurrency market, the NFT market is comprised of creative collectibles, such as art, music, in-game tokens, avatars, and digital trading cards (Umar et al., 2022). Thus, NFTs provide social status in addition to potential financial return (Joy et al., 2022; Yilmaz, 2023).

Moreover, the NFT market is not a single marketplace but a collection of many virtual markets across numerous websites (Nadini et al., 2021). Because of cryptocurrency’s distributed nature, NFT transactions occur in a single, public contract between a buyer and a seller rather than in a central clearinghouse for trades, such as a public stock exchange (Hewa et al., 2021). Thus, buyers can sell their assets anytime, at a dynamic price they determine, rather than waiting for a mediating third party to act (Malik et al., 2023).

2.3. Technical Complexity of buying NFTs

While NFTs are somewhat synonymous with cryptocurrency, the underlying blockchain provides the token mechanism required for NFTs, and the most popular blockchains trade these tokens as digital currencies. To purchase an NFT, a buyer must first own the correct blockchain-specific cryptocurrency token because the purchase price of the NFT and the required gas fees are both denominated in the blockchain’s cryptocurrency (Murray et al., 2022).

Participating in the NFT market is considerably more demanding than a typical online shopping experience. Before purchase, a buyer must complete disparate steps, which include creating a wallet, acquiring the correct digital currency, transferring the currency to the wallet, creating a marketplace account, syncing one’s digital wallet to that marketplace account, paying the gas fees, and acquiring the correct NFT (Zarifis & Castro, 2022). These activities are not streamlined on a single website but are independent activities. Even when successful, buyers face risks, such as interacting with a bogus NFT project, being defrauded by a smart contract that empties their wallets, and paying exorbitant transaction fees (Ferone & Della Porta, 2022; He et al., 2022). These steps demand tenacity, intentionality, self-taught technical literacy, and persistence on the part of the NFT buyer in order to successfully

engage (Albayati et al., 2023).

Why, then, do buyers participate at all?

This study addresses NFT buyers directly to illuminate their durability and explain their continued participation in the market. The results of our research should promote a general understanding of the NFT market and provide future research avenues on how market participants operate in inefficient, developing markets.

3. Conceptual framework and hypotheses development

We propose a theoretical model of the dimensions of motivation and expectation of future value as independent variables, with the purchase intention of NFT buyers as the dependent variable (Fig. 2). Drawing on self-determination theory (Deci & Ryan, 1985, 2000), we include both intrinsic and extrinsic motivations (Kasser & Ryan, 1993, 1996), with specific reference to intrinsic motivation, identified regulation, external regulation, and amotivation (Guay et al., 2000). These variables speak to several theories identified in the literature to explain NFT buyer behavior. Early adopters express intrinsic motivation (Ali et al., 2023; Sharma et al., 2022); NFT buyers chasing a bubble express identified regulation (Steinmetz, 2023; Vidal-Tomás, 2023); herd-driven behavior relates to external regulation motivations (Colicev, 2023; Lyócsa et al., 2022), and amotivation could explain cynical activity (Allen & Potts, 2023; Chohan, 2022). Moreover, our conceptual model includes the expectation of NFTs’ future value as a determinant of the purchase intention of NFT buyers, in line with previous studies focused on the purchase of digital goods (e.g., Fortagne & Lis, 2023; Hamari & Keronen, 2017; J. Wang et al., 2023). Additionally, the expectation of NFTs’ future value was seen to present moderation effects on the relationships between intrinsic and extrinsic motivations and the purchase intention of NFT buyers.

3.1. Self-determination theory

Self-determination theory (SDT) is a theory of human motivation concerned with the individual’s decision making and the motives behind such behavior (Deci & Ryan, 1985, 2000). Situational motivation is centered on the experiences of an individual in understanding a specific activity (Vallerand, 1997). According to this theory (Ryan & Deci, 2000), three different types of motivation lead individuals to make decisions. These motivations extend along a continuum from the amotivation level, where individuals are not motivated, to an intermediate

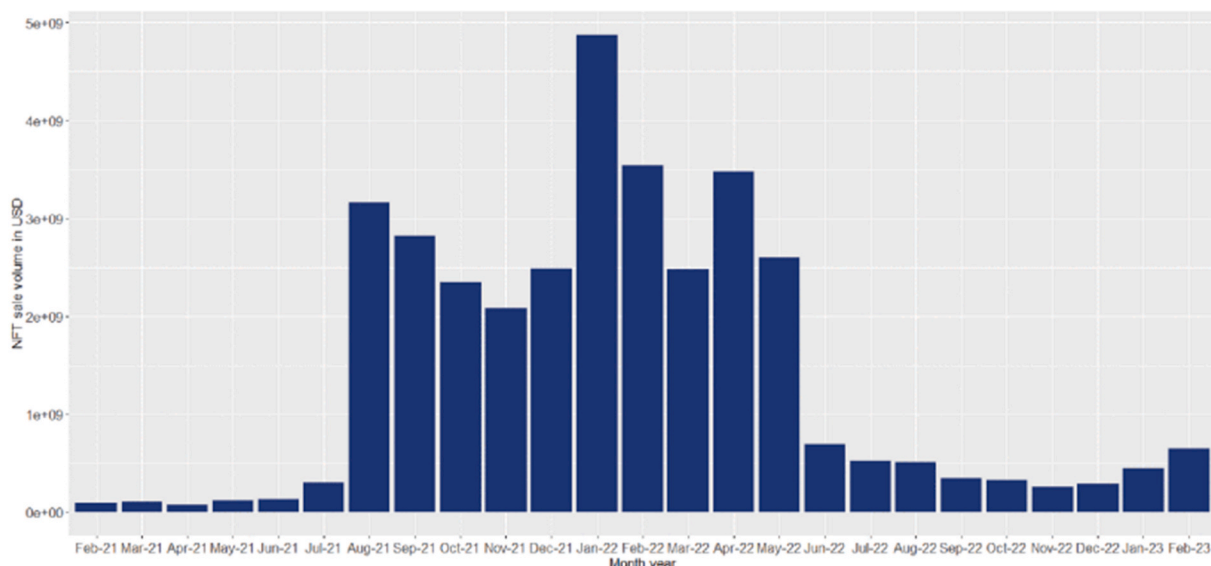


Fig. 1. OpenSea monthly NFT trading volumes (taken from Cho et al., 2024).

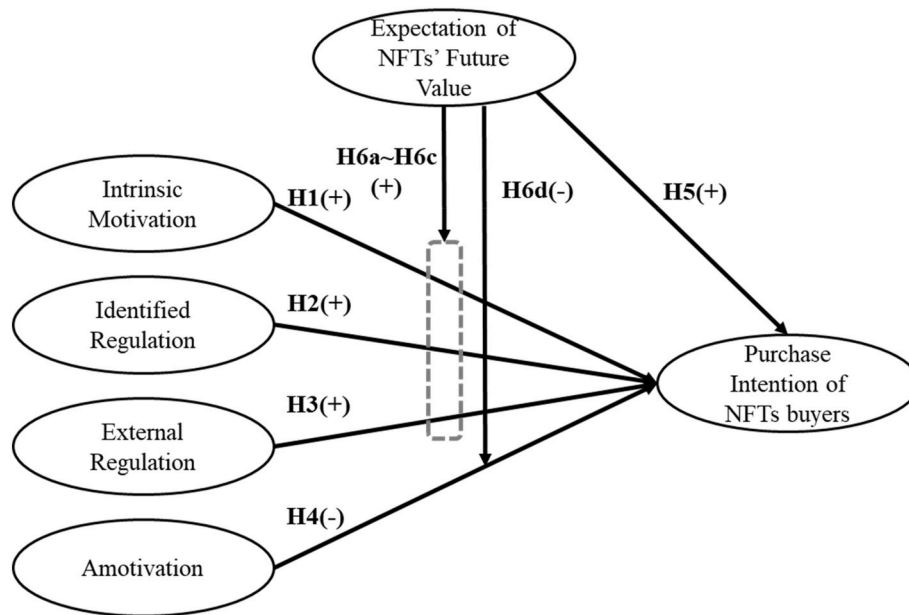


Fig. 2. Conceptual model.

level, where extrinsic motivations play the central role, meaning that individuals are motivated by external elements. Finally, they move to the level of intrinsic motivations, where motivations within the person justify the individual decisions taken.

One extreme of the self-determination continuum (Ryan & Deci, 2000) is amotivation. In this state, individuals do not act at all, or if they do decide, it is without intention because they cannot see the connection between the behavior and the expected result (Lejealle & Dolansky, 2023). This is directly related to one of the Situational Intrinsic and Extrinsic Motivation Scale (SIMS) dimension, amotivation (Guay et al., 2000).

Extrinsic motivations are found in the middle of the continuum, where individuals decide to pursue external rewards, such as wealth/luxury, fame, and image, or to avoid punishments (Kasser & Ryan, 1993, 1996). Thus, we can identify different regulatory styles – namely, external, introjected, identified, and integrated regulations (Ryan & Deci, 2000). In this study, we will explore external and identified regulation with greater specificity since both are included in the SIMS scale (Guay et al., 2000). External regulation refers to situations where decisions are made "to satisfy an external demand or reward contingency" (Ryan & Deci, 2000, p. 72). Identified regulation refers to a more autonomous form of extrinsic motivation because decisions are conscious and sensitive to behavioral objectives and, therefore, the action performed is not unimportant.

Intrinsic motivation sits at the other extreme of the self-determination continuum (Ryan & Deci, 2000) and is linked to the intrinsic regulation presented in the SIMS scale (Guay et al., 2000). In this motivation, decisions are made, and subsequent actions are taken, on the basis of the pleasure, enjoyment, interest, or inherent satisfaction that the behavior can bring (Lejealle & Dolansky, 2023; Ryan & Deci, 2000).

SDT is considered suitable for this research for two main reasons. First, our research focuses on the sustained motivation of buyers rather than technical dimensions or NFT adoption. SDT has been studied extensively in related fields. For instance, the purchase intentions concerning both online buying (Shang et al., 2005) and luxury goods have been researched utilizing the SIMS scale (Truong, 2010; Truong & McColl, 2011). SDT has been used to study the precedents of the NFT space, such as community-driven investing through crowdfunding (Gerber & Hui, 2013), cryptocurrency and initial coin offering purchase behavior (Fisch et al., 2021), and digital games (Uysal & Yildirim,

2016), as well as the purchase of metaverse goods (Ante et al., 2023).

Second, SDT has been used to explore the motivations behind luxury goods purchases (Ajitha & Sivakumar, 2019; Bian & Forsythe, 2012). We regard NFTs as luxury goods for several reasons. The real-world utility of consumer NFTs is far below their intangible value and entirely derived from aesthetics and rarity, a working definition of luxury in several theoretical papers (Heine, 2012; Nueno & Quelch, 1998; Tynan et al., 2010). Additionally, the perceived value of luxury goods is highly dependent on marketing hype, and NFTs may only be enjoyable if they are expensive and desirable to others (Michau et al., 2023). Ample studies exist on the external social signaling and self-satisfaction derived from luxury purchases (Vigneron & Johnson, 1999; Wiedmann et al., 2009). Indeed, this research implies that NFTs function as a new type of luxury good. While questions have been raised to what extent buyers purchase luxury goods for either intrinsic reasons, such as self-directed pleasure (Tsai, 2005), or extrinsic reasons, such as conspicuous consumption to impress others (Veblen, 1899), practitioners have been advised to bifurcate their luxury brand strategies to signal either conspicuous consumption (external motivation) or subtle wealth (internal motivation) (Berger & Ward, 2010; Wilcox et al., 2009). More recent research suggests that luxury-goods decisions may be inauthentically motivated, complicating this internal versus external motivation binary (Goor et al., 2020; Zhang et al., 2022). This mirrors early research on the perceived value drivers behind NFTs, which appear to change over the life of the purchasing decision (Yilmaz et al., 2023).

3.2. Intrinsic motivations

Intrinsic motivations are self-directed. Buyers of traditional luxury items often derive pleasure from aesthetic or decorative appreciation without regard to financial expectations (Anderson, 1974). These intrinsic motivations allow buyers to experience self-directed pleasure (Silverstein and Fiske, 2005). Prior research has identified a subset of NFT buyers who buy and hold, mirroring traditional art patronage (Franceschet, 2021). Others claim NFT buyers may be replicating the experience of physical collectibles (Ali et al., 2023; Stough & Graham, 2023). If NFT buyers are intrinsically motivated, it may explain some of their continued willingness to participate in the marketplace (Sharma et al., 2022). Therefore.

H1. NFT buyers' intrinsic motivations will have a positive relationship

with their purchase intention concerning NFTs.

3.3. Extrinsic motivations

Extrinsic purchase motivations are informed by the social nature of acquiring goods that are seen as valuable by others. Thorstein Veblen successfully argued that social status could be signaled through a consumer's buying behavior (Veblen, 1899). Today, luxury goods routinely reflect pricing strategies that communicate perceived value to consumers (Bagwell & Bernheim, 1996). NFT creators mimic these luxury-goods pricing strategies by elevating the mint prices of NFT projects to indicate quality, future utility, or rarity (Y. Lee, 2022; Mekacher et al., 2022). Because buyers can immediately resell their NFTs, questions have been raised as to what extent NFT buyers are extrinsically motivated and profit driven (Griffin, 2023).

For our study, we considered two variables that, taken together, represent a spectrum of extrinsic motivations: external regulation and identified regulation (Guay et al., 1995; 2000). External regulation concerns rewards and punishment. It is closely aligned with herd-driven motivations, where NFT buyers participate to overcome the fear of missing out (FOMO) (Herman, 2000; Prasad et al., 2023) or to find the next big reward (Karkkainen, 2021).

Identified regulation is a higher level of motivation based on the personal importance and values of the individual (Deci & Ryan, 2000). NFTs are prone to speculative bubbles (Guo et al., 2023; Vidal-Tomás, 2022, 2023) and, since a peculiar feature of the NFT market is the immediacy of secondary sales, buyers who engage in such speculation do so to play the market successfully (Steinmetz, 2023; J. Wang et al., 2023; Yousaf & Yarovaya, 2022b).

Both motivations may be valid rationales for buying NFTs. Therefore.

H2. NFT buyers' identified regulation will have a positive relationship with their purchase intention concerning NFTs.

H3. NFT buyers' external regulation will have a positive relationship with their purchase intention concerning NFTs.

3.4. Amotivation

Cryptocurrency buyers have been accused of an irrational, almost fanatical commitment to their investments, popularized by the ideals of "hold on for dear life" (HODL), which encourages buyers to hold on to their assets through short-term volatility (Zhao et al., 2022), and "diamond hands," which suggest that the eventual, most significant reward comes to those who display the courage to hold long-term assets despite their short-term volatility (Pedersen, 2022). Such traders may undertake increasingly risky bets that are unlikely to succeed with social proofing (Lyócsa et al., 2022). These "you only live once" (YOLO) investors create unstable buyer expectations, which inform many NFT narratives (Allen & Potts, 2023).

There has been limited research into YOLO investors, especially their interests in cryptocurrencies and derivatives like NFTs (Chohan, 2022). Since our study concerns existing buyers of NFTs, an expression of amotivation should counter purchase intention, suggesting that amotivated buyers may experience fatigue and doubt their behavior. Amotivation should have a negative impact on their future purchase intention concerning NFTs. Thus.

H4. NFT buyers' amotivation will have a negative relationship with their purchase intention concerning NFTs.

3.5. Future expectation of value

Expectation of future returns is a fundamental driver of investment activities. Whereas public stock returns signal future expectations through the interplay of share price, investments, and profitability (Fama & French, 2006; Lamont, 2000), buyers of NFTs have minimal

data. While the NFT market is public, financial information is limited to past activities, such as previously priced transactions (Kireyev & Lin, 2021).

The NFT market also suffers from limited market participants (Chowdhury et al., 2023) and illiquidity (Wilkoff & Yildiz, 2023). Buyers' collective expectations set the market price of NFT assets (Malik et al., 2023). The nascent NFT market has already experienced cycles of heightened confidence and, subsequently, lower investor expectations, which impact investment, innovation, and project development (Allen & Potts, 2023).

As there are no traditional fundamentals for NFTs or their underlying cryptocurrencies, the future expectation of value is primarily a function of buyer confidence (Cheah & Fry, 2015; White et al., 2022). In previous studies, the expectation of future profit has been seen to impact both liquidity and asset prices in NFTs (Wilkoff & Yildiz, 2023) and the willingness to purchase (J. Wang et al., 2023). Therefore.

H5. The expectation of NFTs' future value will have a positive and direct relationship with the willingness to purchase.

3.6. Moderating effects of future expectation of value

In line with the previous arguments, the expectation of future value is a typical driver of investment decisions in the stock market (Fama & French, 2006; Lamont, 2000). As buyers have limited information regarding NFT prices (Kireyev & Lin, 2021), they form an opinion or a perception about the value of an NFT from online publications, forums, or the advice of friends (Critien et al., 2022; Kraussl & Tugnetti, 2023; Pinto-Gutiérrez et al., 2022; Umar et al., 2022).

For traditional goods, consumers develop purchase intentions based on price expectations, sometimes driving towards or away from a decision (Jacobson & Obermiller, 1989, 1990; Kwon & Schumann, 2001). The expected future price (EFP) assesses what consumers expect to pay for a product. EFP perception reinforces existing motivations when those motivations positively impact purchase intention, and it can mitigate negative relationships (Jacobson & Obermiller, 1990; Kalwani et al., 1990; Krishna, 1994). Since NFT buyers become NFT sellers, the EFP of their purchases matters considerably. Not only might a future NFT go on "sale" compared to its current price, but the current NFT might increase significantly in value.

In light of prospect theory (Kahneman & Tversky, 1979), where a buyer's reference point becomes the relative basis for gains or losses, NFT buyers face a dilemma with every transaction. Will they regret buying a certain NFT because it will go down in value or regret not buying it because it will go up in value? Loss aversion might paradoxically motivate buyers to purchase if they expect the EFP to rise.

Therefore.

H6. The expectation of NFTs' future value will have a positive, moderating effect on the relationship between:

- Intrinsic motivation and purchase intention concerning NFTs.
- Identified regulation and purchase intention concerning NFTs.
- External regulation and purchase intention concerning NFTs.

H6d. The expectation of NFTs' future value will have a negative, moderating effect on the relationship between amotivation and purchase intention concerning NFTs.

4. Method

4.1. Sample and data collection

A study was undertaken with self-identified NFT buyers to test the proposed conceptual framework. Since we were interested in querying the market's direct-to-consumer segment, which is itself a niche market

rather than a mass market, the challenges in identifying NFT owners were not insignificant. Respondents were sourced through three mechanisms: in public posts on the social media platform Twitter (now [x.com](#)), via three email outreaches sent to investors in emerging technology, and through our research promoted by a finance blog, Young Money. Twitter yielded the vast majority of respondents because it has been a consistent source of aggregation for cryptocurrency communities (Critien et al., 2022; Park & Lee, 2019) and, subsequently, it has become the most popular public platform for discussing NFTs (Kapoor et al., 2022; Lade et al., 2023; Meyns & Dalipi, 2022; Yilmaz et al., 2023). Several influential NFT accounts retweeted (re-posted) the survey to their audiences.

One of the authors emailed investors familiar with cryptocurrency and NFTs, explaining the intentions of the study, promising anonymity, and providing a link to the online survey. They were also asked to forward the survey to others they thought would be knowledgeable about the NFT space (i.e., a “snowball” methodology). Finally, our survey was included in a weekly email/blog focused on younger, investor-oriented men. This nonprobability sampling seems adequate for our research (Hair et al., 2020; Vehovar et al., 2016) since NFT buyers are a niche segment not traceable in an official database. The survey was conducted between March and May 2023, well past the peak of the NFT market in January 2022, during an obvious downslope of interest (Cho et al., 2024). One benefit of studying this period is that the research focused on buyers who remained NFT holders well past any recently inflated expectations.

Our survey yielded 602 respondents who had previously purchased NFTs, providing 482 surveys that were complete and useable. This sample size is comparable to other SIMS research (615 in Truong et al., 2010), superior to other financial research (128 in Kengatharan & Kengatharan, 2014), and commensurate with other NFT research surveys (356 in Fortagne & Lis, 2023, p. 542 in Lee & Cha, 2023).

To calculate the minimum sample size, we follow two procedures. First, the PLS-SEM literature generally presents the “10 times rule” (Hair et al., 2017), according to which the minimum sample size should be greater than ten times the maximum number of structural paths pointing to any construct in the research framework. According to this rule, our minimum sample size should be 50 observations (or 90 if we consider the moderating effects). Second, to reinforce the accuracy in the definition of the minimum sample size, the G*Power version 3.1.9.7 (Faul et al., 2009) was used with the set of parameters recommended by Hair et al. (2017): F-test with linear multiple regression, fixed model and R² deviation from zero; test power 95%; error probability of 0.05 and f² of 0.15. The required minimum sample size is 166. Therefore, the sample size of this study was deemed adequate to conduct a statistical analysis (482 observations). As Table 1 shows, 90% of the 482 survey

Table 1
Sample Profile.

Characteristics	N	%
Gender		
Male	434	90.0
Female	39	8.1
Non-binary	3	0.6
Prefer not to say	6	1.3
Level of Education		
High School	53	11.0
Bachelor's Degree	240	49.8
Master's Degree	129	26.8
Ph.D./Advanced Degree	46	9.5
Other	53	2.9
Age		
18–25 years old	33	6.8
25–34 years old	128	26.6
35–44 years old	168	34.9
45–54 years old	114	23.7
55–64 years old	34	7.1
65+ years old	5	1.0

respondents were male, and the majority were educated to the level of bachelor's degree or higher (86.1% total). Perhaps surprisingly, given the perception of NFT buyers, most of our respondents were over the age of 35 (66.5% total).

4.2. Questionnaire and measures

These data were collected using an online questionnaire comprised of primarily close-ended questions divided into six sections: demographics (age, gender, education, country of origin, country of residence), length of experience with cryptocurrency and NFTs, adapted dimensions of motivation, expectations of future value, and purchase intention concerning NFTs.

The primary variables were operationalized using a four-item scale adapted from Guay et al. (1995; 2000) and their Situational Motivation Scale (SIMS). SIMS includes four categories that we employed as independent variables derived from the motivational factors proposed by SDT: *intrinsic motivation*, *identified regulation*, *external regulation*, and *amotivation* (Deci & Ryan, 1985, 1991). SIMS has been widely used to measure motivation in as diverse arenas as sports (Conroy et al., 2006; Standage et al., 2003), online purchasing (Shang et al., 2005), luxury goods (Truong, 2010; Truong & McColl, 2011). As for the variable of *expectation of NFTs' future value*, we used three questions adapted from Kengatharan and Kengatharan (2014). All five variables were scored on a 7-point Likert-type scale (1 = “Strongly Disagree,” 4 = “Neither Agree nor Disagree,” and 7 = “Strongly Agree”).

The outcome variable, *purchase intention of NFTs buyers*, was operationalized through a single question that scored on a Juster scale of 0–10 (Juster, 1966), ranging between 0 = “No Chance” and 10 = “Certain” (Juster, 1966).

Furthermore, four control variables were chosen: *age*, *gender*, *educational level*, and *cryptocurrency experience*. While demographics have been studied as specific variables in previous studies (Ajitha & Sivakumar, 2019), our focus was on buyer motivation, and no compelling data suggested that SIMS motivations are heavily influenced by age, gender, or educational levels. Experience in cryptocurrency was considered for inclusion as one of our independent variable but was rejected – there is insufficient overlap between cryptocurrencies and NFTs, given that many cryptocurrencies precede the creation of NFTs. This became a proxy for technical comfort – for example, addressing the potential early adoption factor of NFTs (Jiang & Liu, 2021). Ultimately, it demonstrated no discernible distinction.

4.3. Nonresponse, common-method, and respondent bias

Since our survey was open ended in its collection window, nonresponse bias was not a particular concern. However, we did not determine any difference between the early respondents (first 75%) and the late respondents (last 25%) (Armstrong & Overton, 1977).

Common-method bias (CMB) was a concern because we presented the survey only once to a respondent, and we maintained no means of follow up. We know that common-method bias can impact the empirical results of a survey (Burton-Jones, 2009; Podsakoff, 2003). Consequently, several precautionary steps were taken in the design of the survey (Podsakoff, 2003; Podsakoff et al., 2024): (1) respondents did not have access to the theoretical model; (2) respondents were instructed that there were no right or wrong answers; (3) the ordering of the questions deviated from the order of the variables in the conceptual model; (4) the model's constructs were assembled from different, previously validated source materials; (5) the labels of the scales included the extremes (1 and 7) but also the midpoint (e.g., 4); and (6) the study included other variables aside from those in the conceptual framework because this study is a subset of a larger research initiative. Moreover, in line with the recommendations of Podsakoff et al. (2024), two critical procedural remedies were implemented. First, respondents were guaranteed anonymity and confidentiality of their answers to reduce their

evaluation apprehension, and only generic personal information was asked. Second, the scales used in the survey present different properties, related with their anchor types, anchor points and scale formats. By doing that, it is expected to decrease CMB. Finally, other procedural remedies (MacKenzie & Podsakoff, 2012; Podsakoff et al., 2024) were considered to overcome the lack of ability or motivation of the respondents, such as: selecting respondents who have knowledge about the phenomenon under study and for which the topic studied is relevant; emphasize the importance of respondents' personal experiences and enhance their motivation to answer accurately by explaining the importance of knowing more about this recent phenomenon; and used a small questionnaire to enhance the response rate.

In addition to the previous *ex-ante* procedures, two *ex-post* procedures were implemented to ensure that common-method bias was not a presenting issue. First, we implemented Harman's one-factor test (Malhotra et al., 2006; Podsakoff et al., 2024). An exploratory factor analysis resulted in seven factors with eigenvalues above 1.0 when all the variables considered in the conceptual model were included, explaining about 63% of the variance. The first factor was responsible for 21.2% of the variance, a value well below the 50% limit suggested by Podsakoff et al. (2003). Second, we used the market variable test (Lindell & Whitney, 2001; Malhotra et al., 2006). Respondents were asked about their level of knowledge about the Ph.D. programs in management (using a seven-point scale ranging from 1 = very low to 7 = very high), which is a subject well outside the scope of this study. This question was included in the study with that purpose, and is a variable theoretically unrelated with the variables of the conceptual model but similar in terms of format (Podsakoff et al., 2024). This question's average correlation with the set of variables included in the model was 0.049. By selecting the second smallest correlation of this question and the other variables ($r_M = 0.009$), a new correlation matrix was adjusted for common-method bias. The comparison between both correlation matrices indicated no relevant differences ($\otimes r = 0.011$), maintaining the significance levels (Lindell & Whitney, 2001). Hence, the common-method bias was not a concern.

Finally, to ensure the quality of the response, we implemented a suggestion by Atuahene-Gima (2005). At the end of the questionnaire, respondents were asked a question about their knowledge of the subjects presented in the questionnaire on a seven-point scale (1 = very low to 7 = very high). The results show an average value of 5.63 (S.D: = 1.12), which gives us confidence in the responses.

5. Results

We tested our theoretical framework by using partial least squares structural equation modeling (PLS-SEM) with the SmartPLS 4.0.9.3 software (Ringle et al., 2015). We evaluated and interpreted the results following a two-stage approach (Hair et al., 2012). Initially, the reliability and validity of the measurement model were assessed, followed by an examination of the model fit and then the values of the structural model (Hair et al., 2017, 2019).

5.1. Assessment of the measurement model

We first assessed the quality of the measurement model by reviewing the indicator reliability, internal consistency, convergent validity, and discriminant validity (Hair et al., 2017). As Hair et al. (2019) recommended, we removed all the standardized loadings that failed to meet the minimum threshold of 0.70 (Table 2). The only exception was one item in intrinsic motivation, which exceeded the 0.60 value and, therefore, we decided to maintain it in the analysis.

Second, we assessed the reliability of the measurements using both alpha and composite reliability (CR) for the framework variables (Hair et al., 2017, 2019). For the independent variables, all alpha were at or above 0.70 (the variable external regulation was the lowest at 0.70). The CR factor loadings were at or above 0.70 (the lowest being 0.855 for

Table 2
Measurement items and validity assessment.

VARIABLES - scale items	Standardized loadings
SIMS	
Thinking about times when you have purchased NFTs, rate how strongly you agree or disagree with each statement below:(Consider a scale of 1–7 with 1 = Strongly Disagree, 4 = Neither Agree or Disagree, and 7 = Strongly Agree)	
INTRINSIC MOTIVATION $\alpha = 0.784/CR = 0.862/AVE = 0.612$	
Because I think that purchasing NFTs is interesting.	0.645
Because I think that purchasing NFTs is pleasant.	0.805
Because purchasing NFTs is fun.	0.845
Because I feel good when purchasing NFTs.	0.817
IDENTIFIED REGULATION $\alpha = 0.773/CR = 0.869/AVE = 0.688$	
Because I am doing it for my own good.	0.798
Because I think that purchasing NFTs is good for me.	0.855
By personal decision.	*
Because I believe that purchasing NFTs is important for me.	0.835
EXTERNAL REGULATION $\alpha = 0.700/CR = 0.863/AVE = 0.760$	
Because I am supposed to do it.	*
Because it is something that I have to do.	*
Because I don't have any choice.	0.932
Because I feel that I have to do it.	0.808
AMOTIVATION $\alpha = 0.807/CR = 0.873/AVE = 0.632$	
There may be good reasons to purchase NFTs, but personally, I don't see any.	0.816
I purchase NFTs, but I am not sure if it is worth it.	0.759
I don't know; I don't see what purchasing NFTs brings me.	0.819
I purchase NFTs, but I am not sure it is a good thing to pursue.	0.784
EXPECTATION OF NFTS' FUTURE VALUE $\alpha = 0.743/CR = 0.855/AVE = 0.794$	
<i>When you think about the future value of non-fungible tokens (NFTs), how much do you agree or disagree with the following statements? (Consider the scale of 1-7 with 1=Strongly Disagree, 4 = Neither Agree or Disagree, and 7=Strongly Agree)</i>	
The financial returns of NFTs are equal to or higher than the average returns of other investments.	*
Investors are satisfied with future financial returns from NFT purchases.	0.910
The purchase of NFTs usually has an expectation of financial returns.	0.872

Notes: * - This item was deleted during the scale purification process.
 α = alpha; CR = composite reliability; AVE = average variance extracted.

expectations of NFTs' future value). The above results showed that the internal consistency of our conceptual framework's variables was reliable (Hair et al., 2017).

Third, we assessed convergent validity. As with the alpha and CR scores, the average variance extracted (AVE) needed to exceed 0.5 to indicate an acceptable range of findings (Bagozzi & Yi, 1988; Hair et al., 2019). Our results showed that the lowest AVE value (0.612) was from intrinsic motivations. Therefore, the convergent validity of the variables in this study can be assured.

The final step was to evaluate discriminant validity using three procedures: cross loadings, Fornell and Larcker's (1981) approach, and the heterotrait/monotrait ratio (HTMT) analysis. First, we observed that every construct's outer loadings exceeded its cross loadings with other constructs (Hair et al., 2017). Second, the square root of each variable's AVE was more highly correlated to that specific variable than with any other construct. Finally, per the HTMT ratio procedure, all the ratios of correlations between variables were observed to be below the threshold of 0.85 (Henseler et al., 2015), again confirming the discriminant validity (Table 3). The highest HTMT ratio was 0.614, well below the threshold of 0.85.

5.2. Model fit

In line with Hair et al. (2012), the model fit was assessed by reviewing the explained variance of the dependent variables (R^2), the effect size (f^2), the cross-validated redundancy measure (Q^2), and the standardized root mean square residual (SRMR).

Following Falk and Miller (1992) procedures, the explained variance (R^2) values should be greater than 10%. Our results showed 48.5% R^2 for

Table 3
Discriminant validity.

	1	2	3	4	5	6
1. Expectation of NFTs' Future Value	0.891	0.359	-0.311	-0.004	0.408	0.168
2. Purchase Intention	0.414	-	-0.559	-0.121	0.460	0.479
3. Amotivation	0.398	0.614	0.795	0.174	-0.488	-0.365
4. External Regulation	0.028	0.138	0.24	0.872	0.004	-0.119
5. Identified Regulation	0.533	0.523	0.608	0.087	0.830	0.471
6. Intrinsic Motivation	0.219	0.539	0.453	0.177	0.602	0.782

purchase intention, so the explained variance threshold was exceeded (Table 4).

At the same time, we analyzed the effect size (f^2) of each exogenous variable on the endogenous variables. When a specific, exogenous variable was omitted from the model, this process determined the change in the value of the R^2 of the endogenous variable. The thresholds of effect size were 0.02 (small), 0.15 (medium), and 0.35 (large) (Cohen, 1988; Hair et al., 2017), respectively. Our results show that amotivation had a medium effect (0.16) on purchase intention, while Internal Motivation (0.10) and Expectations of NFTs' Future Value showed minor effects (0.03). No other variables displayed effect size above the small effect threshold.

The first step to perform the PLS Predict technique is verifying that the cross-validated redundancy measure (Q^2) must be greater than zero to support predictive relevance for the endogenous constructs (Hair et al., 2012; Shmueli et al., 2019). By utilizing the PLS Predict procedure and applying ten as the number of folds and repetitions (Hair et al., 2012), the value of cross-validated redundancy exceeded zero ($Q^2 = 0.431$) for purchase intention. The second step consists of analyzing the prediction errors (RMSE and MAE) that result from the comparison between the PLS path model and the linear regression model (LM). In our case, we only present the results for one indicator, since there is only one endogenous variable (purchase intention), measured through a single indicator (Table 4). Nevertheless, since for that indicator the values of RMSE and MAE are higher for PLS-SEM than for LM, we can conclude that our model has a high predictive power (Shmueli et al., 2019).

Finally, as a goodness-of-fit measure, we analyzed the SRMR. This index translated the divergence between the observed covariance and the model's implicit correlation matrix (Hair et al., 2017). As Henseler et al. (2014) suggested, this analysis was intended to avoid model misspecification. In our study, the SRMR was 0.058, lower than the determined limit (0.08) suggested by the literature (Hair et al., 2017; Hu & Bentler, 1999).

5.3. Structural model Estimation

As reliability and validity were acceptable, a bootstrapping

Table 4
Results of structural model assessment and PLS Predict test.

Constructs	VIF	f^2	R^2	Q^2	SRMR
Intrinsic Motivation	1.435	0.10			
Identified Regulation	1.817	0.01			
External Regulation	1.103	0.01			
Amotivation	1.435	0.16			
Expectation of NFTs' Future Value	1.264	0.03			
Purchase Intention			0.485	0.431	0.058
	PLS-SEM		LM		
	Q^2 Predict	RMSE	MAE	RMSE	MAE
Purchase Intention	0.431	2.057	1.522	2.110	1.608

procedure of 5000 sub-samples was performed (Hair et al., 2012). Table 5 (Path coefficients) contain the results of the hypothesized direct effect relationships. As suggested by Becker et al. (2023), when evaluating direct effect relationships, the moderator should not be included and, therefore, the moderating effect is accessed in a different step. Even so, due to the space limitation, Fig. 3 shows the results with the moderation effect included. Results show that intrinsic motivation was positively associated with purchase intention ($\beta = 0.273$, $p < 0.001$), as was identified regulation ($\beta = 0.101$, $p < 0.05$) which supported H1 and H2, respectively. External regulation had no discernible effect on purchase intention, failing to support H3, while amotivation had a negative effect ($\beta = -0.357$, $p < 0.001$) on purchase intention, supporting H4. Expectations of NFTs' future value had a positive effect on purchase intention ($\beta = 0.128$, $p < 0.001$). Thus, H5 found support (see Fig. 3).

5.4. Assessment of moderation effects

In line with the recommendation of Becker et al. (2023), the moderating effects were assessed in a second stage, after evaluating the direct effects. Table 6 presents the results of hypothesized moderating effects.

The H6 consisted of four parts. H6a hypothesized that expectations of NFTs' future value would have a positive moderating effect on the relationship between intrinsic motivation and purchase intention concerning NFTs. Expectations of NFTs' future value had no discernible moderating effect on intrinsic motivation. Thus, H6a is not accepted.

Table 5
Results of direct effects.

Path coefficients	Hyp.	Results	Standardized Estimate (t-value)	Standard deviation (STDEV)
Direct Effects				
Intrinsic Motivation → Purchase Intention	H1	Supported	0.267 ^a (5.776)	0.046
Identified Regulation → Purchase Intention	H2	Supported	0.138 ^b (2.612)	0.053
External Regulation → Purchase Intention	H3	Not supported	-0.006 (0.146)	0.043
Amotivation → Purchase Intention	H4	Supported	-0.389 ^a (8.407)	0.046
Control Variables				
Age	-	-	0.007 (0.205)	0.036
Gender	-	-	0.163 (1.120)	0.145
Educational level	-	-	0.026 (0.766)	0.034
Cryptocurrency experience	-	-	0.037 (1.127)	0.033

Notes.

* $p < 0.05$.

^a $p < 0.001$.

^b $p < 0.01$.

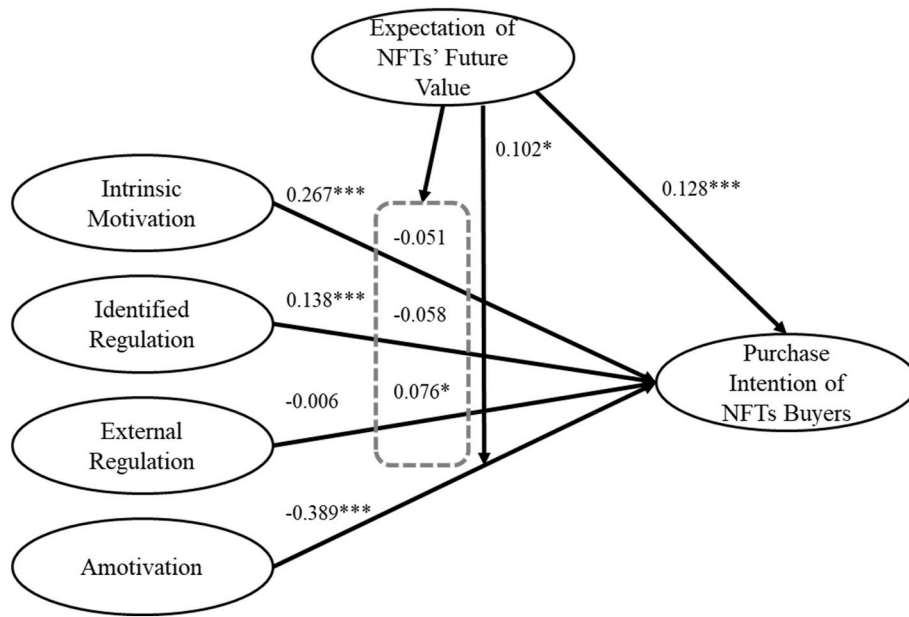


Fig. 3. Conceptual Model with results.

Table 6
Results of moderating effects on purchase intention.

Path coefficients	Hyp.	Results	Standardized Estimate (t-value)	Standard deviation (STDEV)
Moderating Effects				
Expectations of NFTs' Future Value * Intrinsic Motivation → Purchase Intention	H6a	Not supported	-0.051 (1.344)	0.043
Expectations of NFTs' Future Value * Identified Regulation → Purchase Intention	H6b	Not Supported	-0.058 (1.063)	0.047
Expectations of NFTs' Future Value * External Regulation → Purchase Intention	H6c	Supported	0.076 ^b (2.019)	0.038
Expectations of NFTs' Future Value * Amotivation → Purchase Intention	H6d	Supported	0.102 ^b (2.338)	0.045
Direct Effects				
Intrinsic Motivation → Purchase Intention			0.273 ^a (6.802)	0.039
Identified Regulation → Purchase Intention			0.101 ^b (1.977)	0.05
External Regulation → Purchase Intention			-0.034 (0.775)	0.038
Amotivation → Purchase Intention			-0.357 ^a (8.068)	0.044
Expectations of NFTs' Future Value → Purchase Intention			0.128 ^a (3.431)	0.039
Control Variables				
Age	-	-	0.002	0.034
Gender	-	-	-0.024	0.034
Educational level	-	-	0.023 (0.739)	0.032
Cryptocurrency experience	-	-	0.049 (1.448)	0.033

Notes.
**p<0.01.
^a p<0.001.
^b p<0.05.

Likewise, H6b posited that expectations of NFTs' future value would have a positive moderating effect on identified regulation and purchase intention concerning NFTs. However, this was rejected because expectations of NFTs' future value had no significant moderating effect on identified regulation.

Expectations of NFTs' future value have a positive moderating effect on the relationship between external regulation and purchase intention concerning NFTs ($\beta = 0.076, p < 0.5$), supporting H6c (see Fig. 4). It was found that, with low expectations about NFTs' future value, external regulations present a negative relationship with the purchase intention concerning NFTs. On the other hand, when the expectations of NFTs' future value are high, external regulation's effect on the purchase intention concerning NFTs is only slightly negative, almost null. This result is curious because external regulation is most tied to reward-based

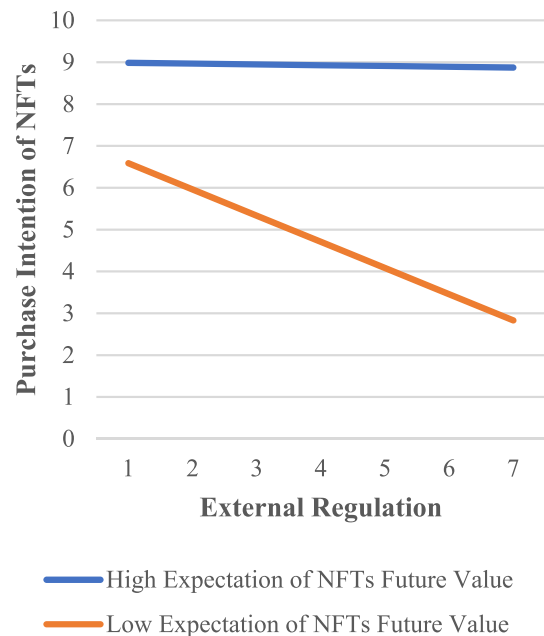


Fig. 4. Moderation effect of NFTs' future value on the relationship between external regulation and purchase intention concerning NFTs.

activity, suggesting that, if future expectations of NFTs were low, such expectations extinguished any external motivation driving a need to buy.

Expectations of NFTs' future value were also expected to have a negative moderating effect on the negative relationship between amotivation and purchase intention concerning NFTs (H6d). As anticipated, expectations of NFTs' future value negatively moderated the effect of amotivation on purchase intention (see Fig. 5), meaning that the value presented by the interaction effect is positive ($\beta = 0.102, p < 0.5$). When expectations of NFTs' future value were high, amotivation had a less negative (and not positive) significant effect than when expectations of NFTs' future value were low.

6. Conclusions and implications

6.1. Contributions and theoretical implications

This seminal study tries to understand the motivations behind NFT buyers' decisions to purchase NFTs. It is the first study, as far as we know, to focus exclusively on NFT buyer motivations. We tested various motivations for NFT buyers as well as expected future value as a motivation and a moderator.

We stressed different motivation effects – intrinsic, extrinsic, and amotivation effects on willingness to purchase. We determined that intrinsic motivation had the most substantial effect. This finding contrasts with how NFT buyers are often characterized in popular media and conceptual articles as herd investors driven by greed. In fact, the two external motivation measures – internal regulation and external regulation – had limited effect and no discernible effect, respectively. These results suggest that NFT buyer motivation is only somewhat impacted by social or monetary gain but not, contrary to previous studies, as motivated by social comparison (Xie & Muralidharan, 2023) or by herd behavior (Mamidala & Kumari, 2023; Ozdemir & Kumar, 2023). Finally, amotivation reduced the willingness to purchase, indicating that buying NFTs requires considered determination and is not an impulse purchase.

The expectation of future performance acts simultaneously as a determinant and moderation effect. It had a medium effect on purchase intent, indicating that it played a role in NFT buyers' motivations. Therefore, it seems that the motivation to purchase NFTs is not only

related to the market itself and, thus, the expectations about NFTs' future value, but also personal motivations. This is in line with the previous findings of Fortagne and Lis (2023) which found a hedonistic attitude demonstrated "a significant impact on purchase intention." Of note in our study, however, is the fact that the moderating effect of expectation about future performance was more significant. Expectations of future performance positively impacted external regulation and herd-driven motivation, whereas it did not affect internal regulation, the motivation most closely tied to speculative behavior.

Likewise, the expectation of future performance mitigated the impact of amotivation, suggesting that rising market expectations could potentially lure NFT buyers back into activity from apathy. Nevertheless, this cannot be regarded as evidence of a future speculative bubble because the negative relationship with the purchase intention concerning NFTs is still maintained. Finally, expectations of NFTs' future value did not impact intrinsic motivations, suggesting that the potential of future performance did not impact NFT buyers motivated by an emotional connection.

We conclude that the market's volatility is not entirely explained as a speculative bubble amplified by bad actors (Vidal-Tomás, 2022, 2023). We did not find support that NFT purchases are primarily driven by a herd mentality (Colicev, 2023; Karkkainen, 2021; Lyócsa et al., 2022) but observed that expectations of future value moderated corresponding external regulation motivations. We found no support that NFT buyers were stubbornly engaging in cynical risk-taking without expectations of future performance (Allen & Potts, 2023; Chohan, 2022) but, instead, such expectations moderated pessimistic amotivation. We did see that intrinsic motivations and expectations of future value had significant impacts on buyer motivations. Taken together, this does not suggest NFT buyers are early adopters of new technology as some have proposed (Chohan & Paschen, 2021; Özkaynar, 2022).

We argue that consumer NFTs are a novel form of luxury goods: they require self-actualization to purchase (Shahid & Paul, 2021), they can trade for significant sums (Kireyev & Lin, 2021), they are not impulse purchases but rather demand premeditation (Y. Wang et al., 2022), and their value is heavily derived from the interplay of personal, group, and societal cues (Vickers & Renand, 2003). Indeed, in assessing the NFT market as a whole, luxury brands have been early creators of NFT Projects and some of the few success stories (Park & Esther Lim, 2023; Yoo et al., 2023).

Thus, NFT buyers can best be categorized as collectors of digital luxury items, excited by the novelty of using cryptocurrency to purchase items they feel an emotional connection to and whose value they expect to increase, which is not directly driven by popularity but may be informed by it.

6.2. Practitioner implications

Since intrinsic motivation displayed the strongest effect, companies entering the NFT market as a brand extension should focus on well-designed NFTs projects for their core audience. The best chance for a successful NFT launch is engaging those buyers who are intrinsically motivated by the pleasure of collecting. As discussed, NFT buyers may see these items as luxury goods and they should be priced accordingly. However, the expectation of future value is still critical to an NFT project's success, indicating that successful marketing hype may help existing brands transition to NFT projects. Despite this, brands would be wise to avoid overpromising and underdelivering. The expectation of future value is a strong moderating effect, so brands should consider NFTs as brand extensions to reward or engage their existing, loyal buyers rather than a quick monetization route. A poorly performing NFT project can sour buyers on all subsequent NFT projects of that brand (Sundararajan, 2022).

Moreover, this study allows NFT buyers to make more informed purchase decisions. Since the market perception of future value heavily influences NFT prices, buyers would do better to assess whether an NFT

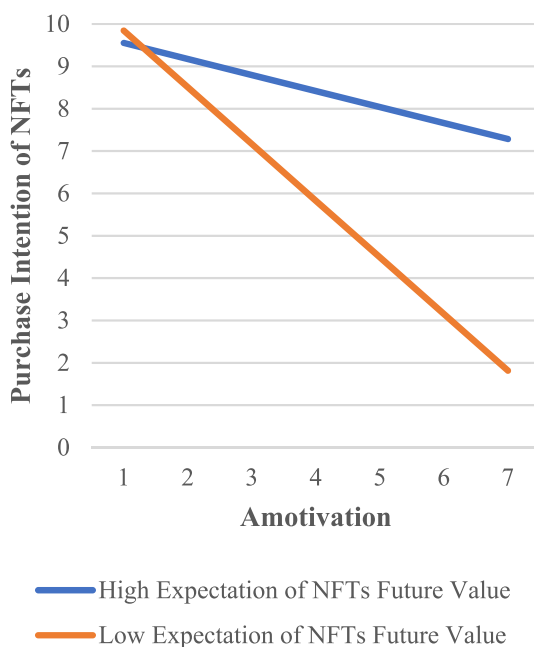


Fig. 5. Moderation effect of NFTs' future value on the relationship between amotivation and purchase intention concerning NFTs.

project is reinvesting in its intrinsic value, with the prospect of future appreciation, versus riding the wave of popularity and utilizing hype. NFT buyers should consider if they are speculative, short-term investors or dedicated, long-term fans, as the volatility in the market impacts both approaches.

6.3. Limitations and future research

This study has several limitations. First, it is constrained to self-reported data on NFT buying decisions. No attempts were made to verify the respondents' purchase of NFTs and, therefore, the research may be limited to direct buyers only, ignoring any non-consumer utility of NFTs. The decision was made to make the survey anonymous to obtain the maximum number of respondents possible, so no follow-up research was conducted. A future study could be undertaken that compares questionnaire results with the trading patterns of an NFT buyer as wallet activity is public. Including verification mechanisms on the NFT purchase in future studies may enhance data reliability.

Second, most respondents were drawn from Twitter, which may not be a representative sample of NFT buyers. While Twitter (now x.com) is a social media platform where traders exchange ideas about NFTs, the respondents recruited through Twitter may represent an unusually tenacious subset of NFT buyers who are more tech-savvy and engaged in the subject matter (Kapoor et al., 2022; Yilmaz et al., 2023). Most NFT projects have individual private chatrooms on third-party applications, such as Discord. A follow-up study could be undertaken with NFT buyers of newer and older NFT projects to understand better how time impacts purchase intention.

Third, this study was conducted from March 2023 to May 2023, which spanned a period when NFT prices and trading volumes were down considerably from their peak (Cho et al., 2024). The participants who owned NFTs could suffer from a survivorship bias because other participants have exited the space and did not respond to our survey. A study like this one could be replicated during a boom cycle to determine if rising asset prices impact any of the motivations studied here.

Fourth, 90% of respondents were male. While the NFT market is understood to be comprised of a disproportionate number of men, a study where a more representative gender sample was undertaken could result in different conclusions.

Fifth, other antecedents or determinants can be studied in future research. We used Purchase Intent, whereas other consumer studies have employed different variables, such as willingness to purchase, purchase value, or effective purchase amount. Likewise, additional variables could be used as moderators such as experience with NFTs or experience with cryptocurrencies, to test how time impacts interest in the NFT market. Similarly, a moderator for risk propensity could be employed, either positively – to test how being more adventurous can lead people to buy these products even though they are not so secure in their future value – or negatively – to test the effect of risk aversion on making people unlikely to purchase NFTs.

Sixth, this study is limited to NFT buyers. Additional studies could research how non-buyers are similarly or differently motivated from NFT buyers. Further exploration of buyers' and non-buyers' motivation might uncover behavioral or attitudinal differences between the groups.

Finally, this study utilized a quantitative research approach. Adding a qualitative or mixed-method approach could help us better understand the interplay of motivations for NFT buyers as well as why non-buyers might remain reluctant to participate. Mixed-method studies, in particular, may provide a deeper understanding of motivation because participant self-reflection could yield new insights.

CRediT authorship contribution statement

Paul Griffiths: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Carlos J. Costa:** Writing – review & editing, Supervision.

Nuno Fernandes Crespo: Writing – review & editing, Supervision.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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