

The business models of NFTs and fan tokens and how they build trust

Alex Zarifis

*University of Nicosia, Nicosia, Cyprus and
University of Cambridge, Cambridge, UK, and*

Xusen Cheng

Renmin University of China, Beijing, China

Abstract

Purpose – The sale of NFTs and the interest in them has “exploded” recently. While there is a lot of information on them, it is not clear what final form they will take. There are several reasons to be uneasy, such as the prevalence of scams, but there are also reasons for optimism and confidence in NFTs. First, they solve the problem of how to own digital assets. Additionally, some of the more reliable and proven cryptoasset exchanges are offering them. However, this innovation will have difficulties reaching a wider audience until more clarity is achieved on two main issues. Therefore, this study aims to clarify what the NFT business models are, and how do they build trust.

Design/methodology/approach – This research attempts to identify the NFT business models with case study analysis in three stages. The first stage is a focus group, followed by 16 short case vignettes and finally four longer case studies.

Findings – The findings show that there are four NFT business models: (1) NFT creator; (2) NFT marketplace, selling creators' NFTs; (3) company offering their own NFT (fan token) and (4) computer game with NFT sales.

Originality/value – This research brings the literature on business models and NFTs together to offer clarity on the proven NFT business models.

Keywords Non-fungible tokens, NFT, Fan tokens, Cryptoasset, Business model, Trust

Paper type Research paper

1. Introduction

A non-fungible token (NFT) is a unique token on a blockchain that is unlike most other tokens on a blockchain that are not unique and are interchangeable. This means that ownership of a specific asset can be recorded in a secure way with an NFT (Das *et al.*, 2022). By recording all the previous owners on the blockchain, it also proves the authenticity (Regner, Schweizer, & Urbach, 2019). This is similar to what is referred to in the art world as provenance. The most common and widely publicized application is the sale of digital artwork to be used as an avatar. The sale of NFTs and the interest in them exploded between 2021 and 22 and continues to be strong (Chainalysis, 2022b). Beyond the sales that capture the headlines with their high price, there is also a large volume of sales at lower prices. Some consumers like the feeling of owning something digital and having some exclusivity (Chohan & Paschen, 2021). Creators and businesses want to benefit financially from their digital assets. There are several reasons for optimism and confidence in NFTs. The most popular technologies solve a real problem and NFTs do that. Ownership of digital assets has been a concern since the Internet was widely adopted and people got access to free digital content. Additionally,



despite still being early days, some of the more reliable and proven exchanges are offering them, e.g. Binance NFT.

While there is a lot of information on them, it is not clear what final form they will take. The current regulation does not seem to be sufficient, and the security companies have not given them sufficient attention yet (Das *et al.*, 2022). There are several reasons to be uneasy: There are outright scams such as artists purchasing their own NFTs for a large amount of money, and there is ambiguity around owners' rights. The fact that NFTs emerged out of the notoriously unstable cryptocurrency and cryptoasset area is concerning in itself for some people. So, while NFTs and the blockchain technology they use is known for reducing the need for trust, there are risks that increase the need for trust.

The challenges and lack of clarity outlined are across the whole value chain from the creators, to the business hosting and selling the creations, to the initial consumer and possible subsequent consumers that may purchase the NFT later. Therefore, it is important to understand the NFT business models and how they support trust with the consumer. This innovation will have a difficulty reaching a wider audience until more clarity is found on two main issues: What exactly are the NFT business models and how are the risks overcome and how is trust built? This research attempts to identify the business models with case study analysis in two stages. Therefore, the research questions of this research are:

What are the NFT business models?

How do the NFT business models build trust with the consumer?

This research does not intend to give a prediction to investors on whether prices of NFTs will go up or down. The purpose is to give clarity on the NFT business models and the whole value chain. Due to the recent and dynamic nature of NFTs, the literature does not sufficiently cover these topics. At this point, there is, however, a sufficient sample and a sufficient track record to draw some initial conclusions about how NFTs are used.

This research uses case study analysis in three stages: first, a focus group with experts; second, a broad and exploratory study of 16 short cases to identify the types of business models and lastly the third stage that is more focused on understanding the four types of models found. The findings show that there are four business models: (1) NFT creator; (2) NFT marketplace selling creators' NFTs; (3) company offering their own NFT (fan token) and (4) computer game with NFT sales.

The following section reviews the literature on NFTs and fan tokens and identifies the issues that should be explored further in the case studies. The methodology section explains how the focus group and the first and second stages of the case study analysis increase the scientific rigor and richness of the findings (Voss, Tsikriktsis, & Frohlich, 2002). This is followed by the analysis and the discussion. Lastly the conclusion gives an overview of this research and proposes future avenues of research.

2. Literature review of NFTs and fan tokens

2.1 The NFT and fan token ecosystem

NFTs are the most recent, but probably not the last addition to “tokenomics”, the token economy that is considered by some to be leading us to Web 3.0, a decentralized Internet where ownership of digital content is supported better (Murray, Kim, & Combs, 2022). Fan tokens are another form of NFT that are typically issued by sports teams to their fans offering them some utility. The center of the NFT ecosystem is the NFT marketplace where consumers can peruse and purchase their NFTs. Three examples of popular NFT marketplaces are Binance NFT Marketplace (www.binance.com/en/nft), OpenSea (OpenSea.io) and SuperRare (superrare.com). These marketplaces take a commission that

is typically 2–5%. Dedicated NFT marketplaces are not however the only ones selling NFTs. Some are sold directly by the creators, and there are also other selling platforms of a specific category such as galleries, museums and auction houses (Ross, Cretu, & Lemieux, 2021). Most of the marketplaces use the same fundamental NFT technology as they are on the Ethereum blockchain using a standard such as the ERC-721 Non-Fungible Standard or variation of it. This token technology utilizes smart contracts to store some metadata about the token. This becomes possible when a digital file is attached to an NFT, a process known as minting. The person who has the unique key to the specific NFT owns it. As discussed, it is the token with smart contract functionality that enables an NFT to be unique, but as the smart contract functionality is there, it can be utilized in additional ways. For example, an NFT can enable the payment of royalties based on its use. This can happen automatically without the need of intermediaries or any actions by humans.

NFTs are not just purchased so that the owner can proudly display them as their avatar, they can also fulfill the role of collateral when taking out a loan through distributed finance (DeFi). In the same way, as other cryptoassets, such as cryptocurrencies, they can be staked in exchange for a loan (Ross *et al.*, 2021).

2.2 The criminal activity in NFTs and fan tokens

The vision behind NFTs, as with other technologies built on the blockchain, is that rules can be encoded in software so that it can be self-regulating and self-governing to some extent. NFTs are a form of cryptoasset. Their specific application can also make them a form of artwork, smart contract for virtual assets or a smart contract for a physical asset. Therefore, it should not be surprising that NFTs attract criminals and forms of crime from all of these areas. The immaturity of the regulation and security, and the difficulties in applying them further exacerbate the situation (Chainalysis, 2022a). This leads to a large volume, and breadth, of criminal activity that increases the level of risk for the consumer and the whole NFT ecosystem. The immaturity of the technology and its application means that proponents often make convincing cases for the hypothetical security blockchain, smart contracts and NFTs can offer, while the iteration the consumer invests their money in now, does not meet that theoretic level of security (Castonguay & Smith, 2020).

One of the crimes specific to NFTs are the various forms of insider trading. A price of an NFT can be manipulated, or information on the trades on an NFT marketplace can be utilized for an employee's personal gain. In a recent case, criminal charges were brought against an employee of an NFT marketplace. It is claimed that the employee purchased NFTs because they had insider knowledge that they were going to be promoted by the marketplace (Stempel, 2022). This case is still being investigated, but it is at the very least an example of what can be done in theory.

A second form of crime is counterfeiting an NFT. In a similar way to a counterfeit painting, an image is made to appear as something more valuable (Das *et al.*, 2022). Alternatively, an image is turned into an NFT by a person who did not own the image in the first place (Woo, 2018).

The risks to the user and other stakeholders do not end with the security concerns but they extend to privacy concerns. The consumers, sellers and others involved in the supply chain must authenticate themselves so their identity, along with their activity may be leaked (Das *et al.*, 2022). The criminal activity outlined above increases the risk for the consumer. Research into the adoption of other technologies shows that as risk increases, so does the need for trust (McKnight, Lankton, Nicolaou, & Price, 2017).

2.3 Business models of other digital assets

Business models cover how the activities and actors come together to complete operations (Amit & Zott, 2012). A business model is more focused on the operations and the specific

processes than a strategy that also considers the external competition (Snihur & Zott, 2020). Analyzing business models is particularly useful when complex technologies and complex processes come together (Zott, Amit, & Massa, 2011). Business models can offer an optimal level of abstraction for everyone inside the organization and other stakeholders to understand what their business does. Business model innovation is happening in many areas of the economy but the rate of innovation seems to be faster in the token economy than elsewhere (Tönnissen, Beinke, & Teuteberg, 2020). The business model innovation happens every time the blockchain technology or its application changes. These innovations typically focus on either mitigating existing challenges (e.g. the trade-off between scalability, security and decentralization) or adding new services. Blockchain technologies make decentralized platforms more capable and reliable (Chen & Bellavitis, 2020).

The literature on business models from the token economy and elsewhere shows what issues to focus on. When trying to understand and communicate business models, it is necessary to focus on a small number of areas, typically four to six, that cover the most important issues (Zott *et al.*, 2011). This is particularly important when a cross-case analysis is attempted. In many business models, what is not there is as important as what is there. In a song, the empty spaces, the notes that are not played, are often as important as the sounds that are created. When the right categories are identified for business models, these important voids can emerge from a cross-case analysis, when they could have been overlooked otherwise. For example, when doing a cross-case analysis of cryptocurrencies one may notice that while some have a clear utility, others have no clear utility beyond speculation. Identifying the right categories gives a template to research several businesses.

There are a variety of categories used in research on business models depending on the topic being explored (Zott *et al.*, 2011). This can be perceived as weakness, as some may aspire to move towards one accepted structure, but it can also be perceived as strength, giving a researcher some flexibility to adapt to their specific topic. Two typical categories include (1) the processes and (2) what gives the competitive advantage (Snihur & Zott, 2020; Zott *et al.*, 2011). Competitive advantage, in the context of a business model refers to how a given business model gives a sustainable competitive advantage in a specific market (Morris, Schindehutte, & Allen, 2005). The word sustainable in this explanation is very important as there are many short-term strategies, like a closing down sale, that can give a company a temporary competitive advantage. For NFT business models the competitive advantage may come from the security, smart contract features and subsequent trust created.

3. Research method

Given the relative immaturity of this area, with NFTs having gained popularity in the past two-three years, an exploratory approach with three stages was taken. This included one focus group with experts, followed by 16 short case studies and finally 4 more detailed longer case studies. Case studies can be used to develop theory (Miles & Huberman, 1994), and a case study approach with many iterations builds more accurate, valid and reliable findings (Eisenhardt, 1989) (see Figure 1).

3.1 Data collection

Focus group: The focus group was particularly necessary as the literature on this new technology is not sufficient. Experts in the area could, potentially, provide a deeper understanding on the current activities in the NFT area and also their future plans. A focus group was chosen ahead of interviews because they have some advantages when exploring a topic. For example, a discussion in a focus group enables useful questions to emerge that a researcher may not have thought of. The professions of all the focus group participants were

related to NFTs. Two worked at NFT marketplaces, two were creators of NFT content, three were full stack developers and the final participant was an enterprise architect. All eight participants are German citizens. The focus group was implemented online using videoconferencing software. It was not possible to bring these experts to one location physically. Further focus groups were not implemented because sufficient clarity was given so that the next stage of the iterative process could start.

It was agreed with the participants of the online focus group that no voice recording would be made and only anonymous notes would be taken. This is widely referred to as “Chatham House Rule”, and it encourages a more open discussion, particularly when the participants are professionals working in the area being discussed and they do not want their personal opinions to be construed as their company’s position. Each participant introduced themselves, their role in their company and what their experience of NFTs are. The topics put to the focus group were: (1) What benefits do NFTs offer your organization; (2) what is your business model related to NFTs, have you seen any other business models with NFTs; (3) how do NFTs build trust across the supply chain; (4) how do NFTs build trust with the consumer and lastly (5) is there something else you would like to add. The topics chosen are based on the literature review and give an opportunity to start exploring typical dimensions of a business model, the processes and the sources of competitive advantage (see [Table 1](#)).

Short case vignettes: The case study approach favors in-depth analysis of a small number of companies. However, in order to develop a comprehensive taxonomy of business models, some broader, preliminary steps are needed. The primary purpose of the short case vignettes is to identify the different types of organizations in the NFT ecosystem. Simply checking

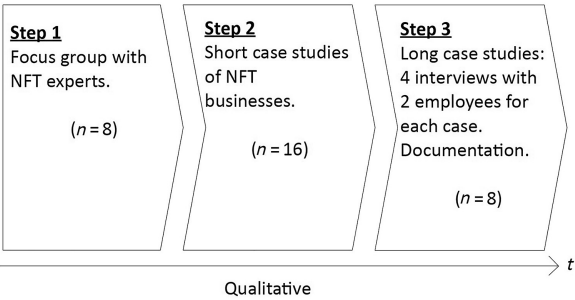


Figure 1.
Qualitative methods
with sequential
research stages

Table 1.
Demographic
information of the
focus group and
interview participants

Measure	Item	Focus group participants	Interview participants
Gender	Female	4	4
	Male	4	4
Age	18–24	3	
	25–39	4	5
	40–59	1	3
Educational level	University bachelor degree	6	6
	University master degree	2	2
Income (in euro per month)	2001–3,000	2	2
	3,001–4,000	4	3
	4,001–5,000	2	3

what companies claim to do is not sufficient, especially in the digital assets ecosystem where companies sometimes claim to be in areas that are attracting the most investment at that point in time. The case vignettes are implemented by desk-based research utilizing databases (e.g. Crunchbase), company reports, academic and practitioner research.

Longer case studies: The longer detailed case studies go beyond desk-based research and include two interviews with people working in each of the four organizations. There were two interviews so that once the first round of interviews was completed for all four cases, the researchers could reflect on all the cases and go back with more targeted follow up questions. The interviews were done online and lasted from around 20 to 50 min. The answers were transcribed, they were not recorded. The interviews were semi-structured with the questions being based on themes that had emerged from the previous stages of the research. This approach reduces the challenges around validity and reliability that are inherent in qualitative research (Voss *et al.*, 2002).

The interviewees for the first case were an NFT creator and a manager. For the second case, they were both managers. For the third case, the first was a software developer, and the second was a manager. Lastly, for the fourth case there was one software developer and one manager. All eight participants are German residents. Six are German citizens. One is Cypriot and the other is Hungarian, but they have lived in Germany for three and five years, respectively.

4. Analysis

4.1 Focus group

Participants shared their beliefs on five topics as outlined in Table 2. Several benefits NFTs offer an organization were identified. Participants pointed to it being a “single source of truth” across the supply chain and ecosystem. This technology also enables loyalties to be paid through smart contracts. The transparency of ownership, and the ability to trace the previous owners back to when it was created, was also seen as a benefit. More abstract notions of

Questions	Themes in answers
1) Business models related to NFTs	NFT creator NFT marketplace, selling creators' NFTs Company offering their own NFTs for promotion and engaging the community around them (fan token) NFT sales in games
2) Benefits NFTs offer an organization? What processes are NFTs used for?	Single source of truth across the supply chain and ecosystem Enable loyalties to be paid through smart contracts
3) How NFTs build trust across the supply chain?	Authenticity of NFT not doubted Less security risks as NFTs are harder to steal than other fungible tokens
4) How NFTs build trust with the consumer?	Authenticity of NFT not doubted Less security risks as NFTs are harder to steal than other fungible tokens For companies offering their own NFTs (e.g. fan tokens) there is already a bond and some trust Many people do not understand the benefits of NFTs so this reduces trust
5) Additional comments	One topic discussed was whether NFTs would gain wider adoption or remain a niche product The enthusiasm and passion of some in this community was also noted

Table 2.
Main themes emerging from focus group

consumers wanting to own something were also discussed. Ownership of an NFT is particularly valued if something is rare or unique.

This research attempted to identify the business models focused on NFTs and not any organization that uses them in a more peripheral way. While there was some discussion on traders speculating on NFTs, this was not considered as an NFT business model for two reasons: First, there was not a sufficient difference in speculating in NFTs to speculating on other assets, and second, the focus group believed most of the speculators were not just focused on speculating on NFT but speculated on several cryptoassets. This logic also applies to collectors that resell some of their NFTs. Therefore, collectors, whether they resell or not, are not considered a business model. The business models that were put forward were NFT creator, NFT marketplace selling creators' NFTs, an organization offering their own NFTs for promotion and engaging the community around them (fan token) and NFT sales in games.

The focus group participants believed the technology supported trust both across the supply chain and with the consumers by its irrefutable nature and higher security that made it harder to steal. When organizations that had an existing relationship with their consumer, like a football team offering fan tokens, or a video game offering unique items, the existing trust in the organization transferred into trust in their NFTs. One participant pointed out that people have a tolerance to a certain degree of "newness" so the familiarity of the football team or video game helps.

4.2 Short case vignettes of NFT businesses

The focus group provided some insight on NFT business models and how they build trust, but further desk based research was necessary to triangulate those results. The short case vignettes would either align with the insights of the focus group or give a different perspective. An overview of the key processes and competitive advantages across the sixteen vignettes is provided in [Table 3](#).

NFT creator: The creators of NFT art were in most cases artists before this medium appeared. This is what a review of the 20 most popular NFT artists suggests. So the creators are not particularly different to other forms of art, but what is different is the process. One of the most popular methods is to use an algorithm to create the art. In some cases, specific instructions are given so that the algorithm creates a clear vision the artist has, while in other cases, more vague instructions are given without a clear specific end-goal in mind. Some artworks are very simple, like many of the Bored Ape Yacht Club NFTs, while others like the work of Murat Pak can be quite sophisticated.

NFT marketplace, selling creators' NFTs: Several NFT marketplaces are identified, and they have the same fundamental processes. There are some differences on the commission they request and the blockchain that is used to complete the transaction. While the most popular blockchain for NFTs currently is Ethereum, others like Solana are also used. The use of different blockchains happens for various reasons. It is not clear which blockchain will be the most effective and the most popular ([Chainalysis, 2022b](#)).

Perhaps unsurprisingly, traditional galleries are moving into auctioning NFTs. For example, Sotheby's had their first auction of Murat Pak NFTs totaling 17 million GBP ([Sotheby's, 2021](#)). A model that may be sufficiently different is the NFT marketplace aggregator. While aggregators are popular in many online services, they are particularly popular in all aspects of cryptoassets and DeFi ([Piech, Chua, & Sharma, 2022](#)). Therefore, it may be more useful to consider an NFT marketplace aggregator to be part of the very popular DeFi aggregator business model.

Company offering their own NFT (fan token): The processes and competitive advantage of fan tokens may appear clearer and easier to understand than other NFT models. Sports fans'

	Case	NFT business model	NFT processes	NFT competitive advantage
1	Murat Pak	NFT creator	Create digital art minted as an NFT	Irrefutable ownership Ability to sell a unique piece of digital art, or limited to a specific number
2	Manuel Rossner			
3	Monica Rizzolli	NFT marketplace, selling creators' NFTs	Sell NFT digital art and in some cases fan tokens	Builds trust with the consumer
4	Matt DesLauriers			Irrefutable ownership
5	OpenSea			Gives consumers unique or rare digital art they can own
6	Nifty Gateway			Allows fans to feel closer to their team
7	Binance NFT	Company offering their own NFT (fan token)	Give NFTs as rewards	Allow fans to sell their fan tokens
8	SuperRare			
9	Legia Warsaw Fan Token			
10	Argentine Football Association fan token			
11	Appollon Limassol Fan Token	Computer game with NFT sales	Make payment with fan tokens (e.g. as part of a players wage)	
12	PSG Fan Token		Give NFT so that the person receiving it has certain utilities and rights (e.g. voting rights)	
13	Axie Infinity		Use NFT technology to offer subsequent offers and rewards to the holder of the fan token	
14	Gods Unchained		In-game purchases of NFT minted virtual items	Enables players to gain unique or rare items
15	Splinterlands		Limited or unique in game purchases	Offers incentives to game developers to continue producing unique and rare items
16	DeFi Kingdoms		Reward players for playing 'play to earn'	

Table 3.
The 16 cases of the NFT ecosystem and 4 business models

passion for their team and willingness to engage in a variety of mediums is beyond doubt, so the NFT technology offers one more tool or medium for this to happen. Nevertheless, fan tokens are by definition a niche as the appeal to someone who is not a sports fan is limited. Fan tokens are sold primarily by dedicated marketplaces like [Socios.com](https://www.socios.com), but some of the other NFT marketplaces like Binance also offer them in a separate section. Typically, if a football team is going well, the value of their fan token goes up so the fans can make money. This makes them more invested in the team's success. There appear to be less incidents of crime with NFT fan tokens in comparison to digital art minted as NFTs. This can be considered logical as the fan token is usually in a "closed system" of a specific marketplace's application, e.g. [Socios.com](https://www.socios.com) and the fan.

Computer game with NFT sales: Several mainstream games tested NFTs with mixed results. It is not clear if these games will permanently adopt them. There is a record of resistance from fans to NFTs being brought into existing games that started without them. It can be perceived as having to pay for something they could earn for free by playing, something some refer to as "bait and switch". Games that focus on NFTs from the start, like the four explored here, do not run that risk.

Cross-case analysis: The cross-case analysis involves comparing the sixteen cases between themselves by construct. So first they are compared based on their NFT processes, and secondly they are compared based on their competitive advantage. The purpose is to identify the characteristics that are common across all cases and those specific to each model. Looking across the 16 cases for the construct of NFT processes, it is clear that these are similar or identical for the cases with the same proposed business model, but significantly different between the proposed models. This is an indication that the proposed models are valid as organizations with the same model have consistent characteristics while organizations with different models have fundamental differences.

Looking across the 16 cases for the construct of the competitive advantage the NFT provides, once again within the same proposed business model they are either very similar or identical. Between models there are both similarities and differences. The ability to own something unique is a competitive advantage in all cases apart from the fan tokens.

4.3 Longer case studies of NFT businesses

The longer case studies are the third stage in an iterative process to further explore the four NFT business models identified. The interviews focused on three areas: (a) How they understand their business model; (b) What are their NFT processes and thirdly (c) what is the competitive advantage of this business model. Some insights that came out stronger in this stage are that NFTs build a community between the collectors and as the purchase history is transparent, it gives insights into the consumers' behaviour. The main points raised by the interviewees are discussed below and summarized in Table 4.

(1) NFT creator

- How they understand their business model: The artist studied fine arts and worked on developing websites as the artworks they created were not initially enough on their own to provide an income. The two interviewees see NFTs as a

Case	NFT business model	NFT processes	NFT competitive advantage
1	NFT creator	Create digital art minted as an NFT Collect NFT digital art	Irrefutable ownership Builds a community and trust between the collectors
2	NFT marketplace, selling creators' NFTs	Sell NFT digital art	Irrefutable ownership Builds a community and trust between the collectors Purchase history transparent, gives insights into consumers
3	Company offering their own NFT (fan token)	Use specialized platform for all the NFT sales	Allows fans to feel closer to their team Builds a community and trust between the fans Allows fans to go to special events
4	Computer game with NFT sales	Primarily based on the "play to earn" model Optional in-game purchases of NFT minted virtual items	Gives players something they value, and that they can sell, that does not cost the company anything No compulsory purchases reduces push-back and resentment Builds a community and trust between the players

Table 4.
The 4 cases and 4
business models of the
NFT ecosystem

way to empower the artist and encourage creativity. The process of minting creates an electronic provenance record that is very important for the collectors. There are not many expenses or wages. The artist can either handle everything themselves or they may have a small team of two or three people supporting them. The priority for this artist is to have a strong portfolio of work: “You cannot show what you are about in one piece; you need to have a body of work that is consistent in style and with a breadth of creativity.”

- NFT processes: The NFT minted artworks that can be sold on an NFT marketplace. They also purchase artworks from lesser known artists for their collection.
 - Competitive advantage of this business model: They do not get royalties from the use of their artwork. Once it is sold, the new owner has complete freedom to do whatever they want. The main competitive advantage is the sense of ownership the consumer has and the feeling of being part of something.
- (2) NFT marketplace selling creators’ NFTs
- How they understand their business model: This NFT marketplace is specialized and only offers NFTs. It is not a part of a more general platform or an aggregator. They use the Ethereum level 1 blockchain to complete the transactions. They have been active for two years and they consider marketing to be decisive for their growth: “At the start we just accepted any NFT . . . we promoted the ones we liked the look of . . . now we know who the popular artists are, we are more deliberate about what we do . . . we support communities of collectors . . .”
 - NFT processes: They sell digital art that is minted as NFTs. They implement several business intelligence methods to gain insight on products.
 - Competitive advantage of this business model: NFTs make several of the marketplace processes simpler and more reliable. Controlling the stock, making sales and managing returns are all easier than they would be without NFTs.
- (3) Company offering their own NFT (fan token).
- How they understand their business model: The sales of fan tokens are done by a different company that is specialized in selling fan tokens: “We were approached by this website, we didn’t think about this ourselves. They showed us their client list and the progress of those projects, and it was very impressive. If some very famous clubs are doing it why shouldn’t we . . .”. Setting the fan tokens up did not cost anything as all the costs were covered by the platform. Their task is to find ways to engage and reward those that have tokens so that they are happy and they attract more fans with positive reviews and word of mouth. The plan is to increase the activities over time.
 - NFT processes: The specialized fan token platform handles everything. The team who’s name is on the fan token receives a percentage of the sales and a list of owners that is updated in real time. The platform recommends some forms of engagement, but it is the team’s decision what to do.
 - Competitive advantage of this business model: The organization who’s name is on the fan token outsource the whole process to a specialized platform that handles everything. The specialized platform does far more than a typical NFT

marketplace can do. This NFT model has reached an impressive scale that suggests it is financially viable, and here to stay.

(4) Computer game with NFT sales.

- How they understand their business model: The game was created by a small group of friends who had experience working on other games from larger developers. The game utilizes NFTs, and it is in the broader category of “play to earn games”: “the concept of ownership does not have to be individualistic, our players can own their characters but the game is better because of the collective owners coming together, so it is both about owning individually but also shared ownership and shared responsibility”. The creators made a profit, but they considered it important not to go too far monetizing the experience as there would be push-back to that: “we are also gamers, so we do not need consultants to explain our players to us, we are one with them ...”.
- NFT processes: Characters in the game can be earned, bought and sold.
- Competitive advantage of this business model: By having the option to earn the NFT, it reduces the push-back and the barrier to entry. Those who have patience can earn the characters they want, and those who do not have enough patience can purchase them.

5. Discussion

This research used an iterative qualitative methodology to explore the emerging NFT ecosystem and identify the proven NFT business models within it. While NFTs are members of the broader cryptoasset class of assets, they have some differences as a technology, as a business and in the consumers they attract, which means they are part of their own separate NFT ecosystem, with their own NFT business models.

The three stages of the method started broadly and progressively became narrower and more focused, concluding with four business models. These four business models were not only identified but a deeper richer understanding of them is achieved.

This research attempts to identify the business models focused on NFTs and not compile an exhaustive list of any organization that uses them in a more peripheral way, such as traders or companies using NFT to track products in their warehouse. After careful consideration, NFT traders, NFT marketplace aggregators and traditional galleries that sold some NFTs are not considered as NFT business models. NFT-related models that have not yet sufficiently proven themselves are also excluded. This research identifies the current proven models that are expected to continue for some years. They will undoubtedly be joined by new models over time.

Business models capture the processes and how value is added (Zott *et al.*, 2011). This research separated the business model into the main NFT processes and the competitive advantage of the model. The role of trust was identified as a competitive advantage by all four NFT business models. The four business models are outlined below and presented in Figure 2:

- (1) NFT creator: The NFT creator is an artist that creates digital art that is then minted as an NFT and sold on an NFT platform. The main NFT process is to create digital art minted as an NFT. The NFT competitive advantages include having proof of irrefutable ownership, the ability to sell a unique piece of digital art, or limited to a specific number typically quite low, no more than eight. The reliability and transparency of the NFT build trust with the consumer. Lastly a community is built around the creators' NFTs and trust is built between members of the community.

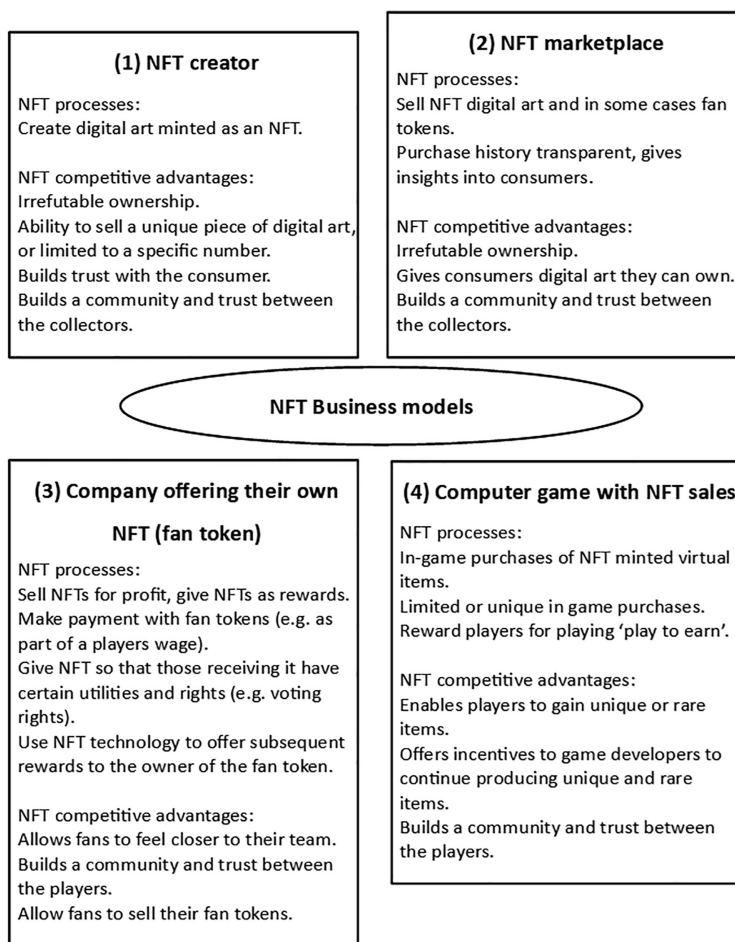


Figure 2.
The four NFT business models

- (2) NFT marketplace, selling creators' NFTs: The main NFT processes are to sell NFT digital art and in some cases fan tokens. The purchase history of the consumers is transparent, so this gives insights into their interests. The NFT marketplace can use this to choose which artists and artwork to promote. The competitive advantage of NFTs as part of this business model is once again the irrefutable ownership and that it gives consumers digital art they can own. As with the previous business model, a community and trust are built between the collectors.
- (3) Company offering their own NFT (fan token): This business model has several NFT processes. These are to sell NFTs for profit, to give NFTs as rewards, make payment with fan tokens (e.g. as part of a players wage), give NFT so that the person receiving it has certain utilities and rights (e.g. voting rights) and to use NFT technology to offer subsequent offers and rewards to the holder of the fan token. NFT competitive advantages within this business model are that they allow fans to feel closer to their team and build a community and trust between the fans. It also allows fans to sell their fan tokens.

- (4) Computer game with NFT sales: The main NFT processes of this business model are in-game purchases of NFT minted virtual items, limited or unique in game purchases and rewarding players for playing, referred to as “play to earn”. The competitive advantages are that it enables players to gain unique or rare items, offers incentives to game developers to continue producing unique and rare items and builds a community and trust between the players.

6. Conclusion

NFTs are utilized in new and innovative ways in recent years. It is inevitable that the literature on this emerging technology and business is incomplete, but there is a sufficient sample, a sufficient track record of companies utilizing NFTs to identify some main business models and how they build trust. This research brings the literature on NFTs, cryptoassets and business models together. The research method applied three stages of qualitative analysis culminating in a case study analysis of four business models. The case study analysis drew out the most important features of the organizations utilizing NFTs and also what may be missing in comparison to others. The empirical evidence points to four proven NFT business models: (1) NFT creator; (2) NFT marketplace selling creators' NFTs; (3) company offering their own NFT (fan token) and (4) computer game with NFT sales. NFTs, across all four business models, provide a “single source of truth” and transparent transactions that build trust between everyone involved. These four business models build trust with their stakeholders and avoid the cybersecurity risks and scams that are prominent in this area.

Future research should continue to monitor this space as it is almost inevitable that new NFT business models emerge and prove themselves worthy of being considered along the four identified here. Future research can also explore whether the many aggregators in DeFi can be considered to be part of one broad DeFi aggregator business model, or if there are some sufficiently different aggregator business models that should be seen as separate business models.

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About the authors

Alex Zarifis is a lecturer at the University of Nicosia in Cyprus and a researcher for the University of Cambridge in the UK. He received a BSc from the University of Leeds, followed by an MSc and PhD from the University of Manchester. His research focuses on E-commerce, trust, privacy, online collaboration, artificial intelligence, Fintech, project management, leadership and blockchain. His work has featured in journals such as *Computers in Human Behavior*, *Internet Research*, *Information Processing and Management*, *Information Technology and People*, *International Journal of Electronic Business* and *Electronic Commerce Research*. He served as guest editor for *Electronic Markets* and the *British Journal of Education Technology*. His research has been presented in conferences such as the AIS European Conference on Information Systems (ECIS). Alex Zarifis is the corresponding author and can be contacted at: zarifis.a@unic.ac.cy

Professor Xusen Cheng is a Full Professor of Information Systems in the School of Information at Renmin University of China. He is also a research fellow in the Metaverse Research Center and School of Interdisciplinary Studies at Renmin University of China. He obtained his PhD degree from the University of Manchester, UK. His research interest includes trust and information systems, design and behaviour issues of digital business, digital economy and Metaverse. His research has been published in leading journals such as *MIS Quarterly* and *Journal of Management Information Systems*.

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