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Transforming commerce: The role of NFTs in enhancing customer engagement and loyalty

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Abstract

With non-fungible tokens (NFT) bringing fundamental change to digital business models, advanced opportunities for boosting customer engagement have opened. This paper discusses the functions of NFTs in offering brands ways to create more intimate relationships between consumers and brands and providing the consumers ownership of valuable, unique digital assets. Based on the case data and market information assessment up to August 2022, the current paper assesses how brands incorporate NFTs into loyalty programs and long-term customer engagement. A comparative analysis of models and a year-by-year trend shows that NFTs' impact continually overshadows the traditional approach. Based on the findings, technology adoption and market fluctuations remain issues. Still, NFTs offer a new outlook to businesses where a customer experience-oriented paradigm shift occurs, allowing brands to create deeper connections with consumers and increase customer lifetime value.

Keywords: NFTs (Non-Fungible Tokens); Customer Engagement; Brand Loyalty; Digital Commerce; Blockchain Technology

1. Introduction

1.1. Definition of NFTs and Their Relevance in Digital Commerce

NFT is an interchangeably unique medium of identifying possession of particular assets or contents covered by blockchain solutions. While tokens like BTC, ETH, or any other crypto coin are likely divisible and not easily distinguishable, each NFT is unique and individual and more suitable for use cases such as tokenizing art, collectibles, songs, and virtual items. Regarding the case of digital commerce, NFTs recast the classical approach to customer relations by offering a different mode of constructing customer exclusivity, customization, and relevance. They allow brands to create special digital engagements, like restricted products or occasions, that improve the bonds with their audiences.

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Figure 1 Non-fungible tokens

1.2. The Growing Popularity of NFTs by 2022

Since 2022, new developments in blockchain technology and market demand for digital assets have led to a surge in the use of NFTs. The recent breakthrough came with the active adoption of NFTs by sectors like fashion, sports, gaming, and entertainment. Nike, Gucci, and NBA Top Shot identified NFT as the concept that can form the basis for new promotional tactics.

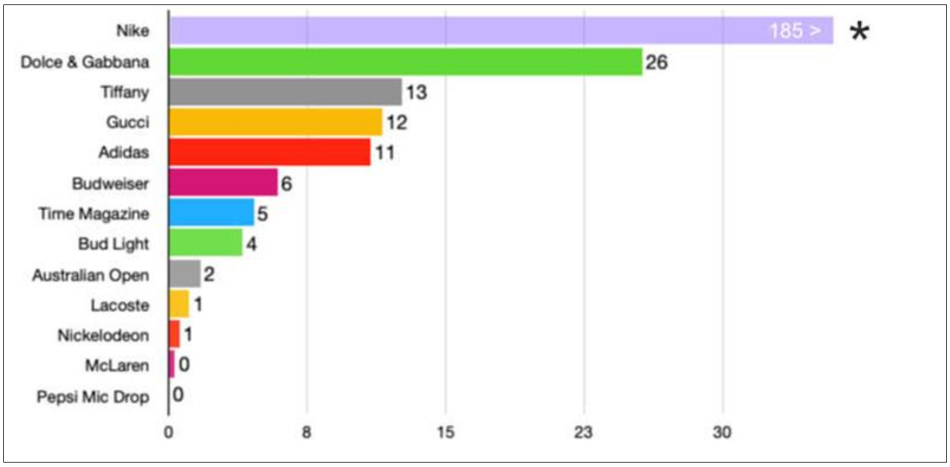

Figure 2 Brand revenues from NFTs

It also observed the rise of NFT marketplaces, which include OpenSea and Rarible, to buy, sell, and trade NFTs. However, NFT's ability to nurture customer loyalty in a world that was becoming increasingly competitive through brands made them relevant to commerce.

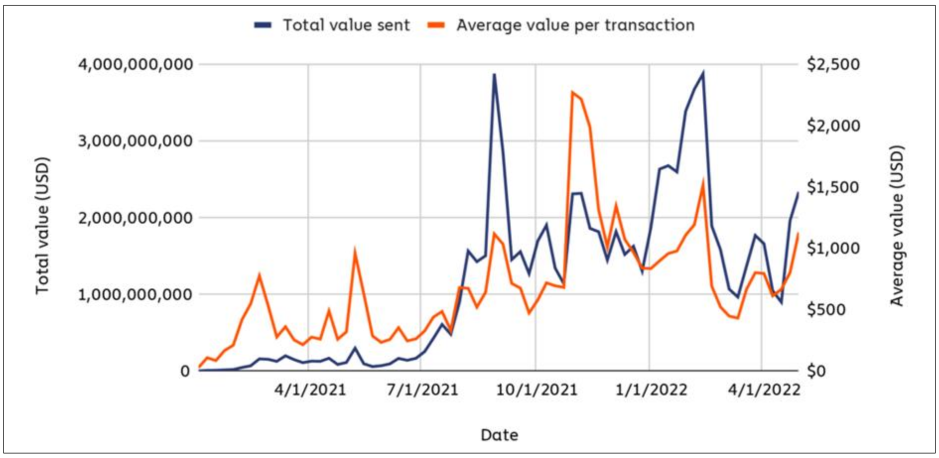

Figure 3 Total Cryptocurrency value and average value per transaction sent to NFT platforms, 2021-2022

1.3. Objectives of the Study and the Research Gap

Therefore, this research aims to examine how NFTs redefine customer strategies for engagement and loyalty. Although there is a body of literature related to NFTs regarding technology and art presence, more specific information on the potential use of NFTs for business purposes and the extent of their influence on customers has not been widely studied. To fill this gap, this paper examines case studies of companies and analyzes trends from the global market until August 2022 concerning engagement and stable consumer loyalty using NFT. The research also aims to evaluate NFT-based tactics with standard loyalty programs to understand their applicability, efficacy, and feasibility.

2. Background and Literature Review

2.1. Overview of NFT technology and its applications in commerce

NFT is constructed on blockchain technology, which guarantees the token owner has an inalterable right to the irreplaceable digital artistry. Unlike cryptocurrencies, every NFT piece can be unique, and uniqueness cannot be exchanged directly. That is why NFTs are appropriate for creating tokenized ownership of multiple digital and tangible assets such as artwork, music, videos, virtual products, and land. Smart contracts are automated transactions coded into a blockchain that underpins NFTs as authentic and easily traceable.

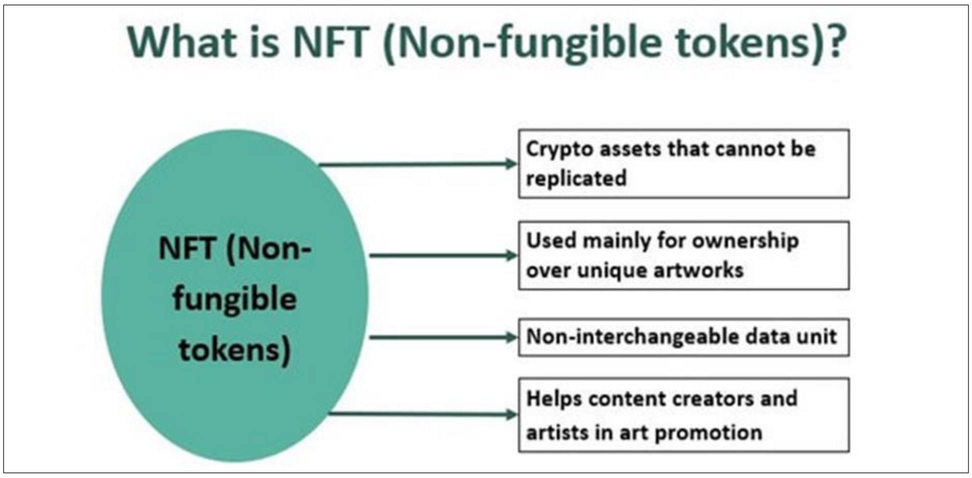

Figure 4 Overview of NFT

In commerce, however, NFTs have created new opportunities to create value and interact with customers. They enable companies to turn exclusive goods into tokens somehow so consumers are issued ownership rights and can easily sell their assets. For instance, France's luxury brands have incorporated NFTs to verify exclusive items and provide user experience. At the same time, sporting bodies have integrated NFTs into creating sports memorabilia, such as cards and physical event tokens. Moreover, they also allow organizations to establish customer loyalty schemes where users pay for specific tokens that convey the rights to attend particular events, receive specific discounts, or buy certain products.

NFT use cases also go deeper than direct sales and marketing rewards. They are also used for brand building and creating loyal and engaging customers because it allows them to interact and feel special. When combined with new technologies like augmented reality and virtual reality, resulting from businesses using NFTs, companies can offer consumers unique buying experiences at the next level. Despite being still in its infancy when implemented in commerce, it presents a vast potential by eliminating conventional business conventionalism, centering on innovation, explicitness, and customer focus.

2.2. Existing studies on NFTs' impact on customer behavior

Previous research evidence on NFTs and customers can show their possible effects on collaboration and customer loyalty since the ability to own unique assets and royal experiences can influence customers' behavior. Studied materials establish that implementing NFTs creates an atmosphere of elitism and prestige, attracting customers who fancy individualism and scarcity. Analyses show that NFTs create more profound relationships between consumers and brands because consumers get more attached to digital products linked to certain goods or services.

Much attention has been paid to the potential of using NFTs in improving the loyalty program. Nike, Starbucks, and others have provided proof that consumers will return to the brand more often when NFT is offered as collectibles, tokenized upgrades, or even a product benefit. Such studies depict the transition from transactional to experiential loyalty, where consuming 'the novelty and usefulness of NFT.'

Similar work considers the behavioral economics of NFTs and the ways that scarcity and timing create urgency and content interest. This scarcity model speaks to the business by pushing immediate concept uptake and deepening customers' engagement in brand systems. Furthermore, literature shows that there is room to intensify the gamification aspect of NFTs; for instance, deploying the token in contests or using it in interactive systems will amplify customer engagement.

However, existing literature also focuses on some of the problems. Problems like technological access, customer unfamiliarity with some concepts, and changing market perceptions affect the ability of NFTs to help change behavior. Despite new levels of higher conversion, customer behavior change, and interaction results, the absence of longitudinal research and standardized measures to examine customer engagement through NFTs raises the need for further study.

2.3. Limitations of previous research, emphasizing the need for this study

Prior research works on NFTs have helped establish the technology background of NFTs and acquire the primary categories and use cases of the new innovative technology, including in art, gaming, and other collectible markets. However, some lacunae prevent an overwhelming understanding of the role of social media in their larger context, specifically, their role in customer relations and loyalty. A good share of publications underemphasize NFTs' artistic and speculative properties while disregarding their opportunistic features for altering commercial approaches. This has left a research gap about how NFTs, as an emerging innovation, can be implemented systematically to augment customer relationships through an organization's business models.

Besides, most current trends focus on case studies and informal experiences, which are useful but not generalizable. The lack of volume-scale, statistically based research hinders the identification of the genuine effects of NFTs on customer behavior or other key milestones. Moreover, most of the works focus on the early adopters and successful cases, thus failing to consider mid- and long-term effects and other cases, which could provide a complete and varying picture of NFT.

Another major drawback is that previous research is based on short-term analysis. At the same time, several aspects related to the long-term development and further sustainability of procedures and actions are not explored. This demonstrates that since the market for NFTs is highly dynamic and is still rapidly searched as a tool for commerce, the previous knowledge gaps may not have been completely captured by existing studies.

Due to these gaps, this study is useful in narrowing the gap by employing a more systematic and theoretical approach to exploring the role of NFTs in improving customer engagement and loyalty. Thus, this research aims to provide practical recommendations and discuss the general implications of NFT integration into commerce based on the year-wise adoption analysis, model comparison, and other quantitative results up to August 2022.

3. Methodology

The approach for this analysis is meant to afford a detailed understanding of NFTs and their implications on customers and brand loyalty in diverse digital purchase realms. To do this, both qualitative and quantitative research approaches will be adopted to have a holistic approach to addressing the topic.

The research will first involve a qualitative assessment of case companies implementing NFT to engage customers. This will entail the scrutiny of the publicly available information on the different organizations, including but not limited to press releases, brand reports, and the other interviews carried out by different gurus within such sectors, concentrating more on how NFT implementations are being practiced or executed as well as their results. It is proposed that representatives of companies from different sectors, such as fashion, sport, and entertainment, be invited to express their specific experience of applying NFTs more effectively in customer loyalty.

While measuring the quantitative aspect, questionnaires such as market data and surveys on the behavior of consumers will be used to evaluate the success of NFT in engaging more customers. Secondary research data on the NFT industry and customer analysis of purchase frequency, consumer buying loyalty, and their level of interaction before and after NFT implementation were obtained from NFT marketplaces, e-commerce sites, and customer responses. Moreover, the systematic review will follow the year-wise trend of NFT integration in commerce to note market growth and consumer behavior patterns in 2019-2022.

This methodology will also compare the long customer loyalty programs and those based on NFTs. The research will compare the effectiveness of NFTs to the conventional approaches by assessing KPIs, including lifetime client value, satisfaction levels, and repeated purchase behavior. The data collected for the research will be up to August 2022 to make the results obtained in the study relevant to the time frame mentioned.

Table 1 Research Framework

Component	Description
Research Approach	Mixed-method approach combining qualitative and quantitative analysis
Data Collection Methods	Primary surveys, secondary data from industry reports, blockchain analytics
Study Focus	Evaluating the impact of NFTs on customer engagement and loyalty in digital commerce
Timeframe	2019–2022

Table 2 Data Sources

Source	Type	Purpose
Customer Survey	Primary Data	Collect customer perspectives on NFTs
Blockchain Transaction Records	Secondary Data	Analyze NFT usage trends and metrics
Industry Reports (2019–2022)	Secondary Data	Track adoption and case studies on NFT usage
Social Media Engagement Analytics	Secondary Data	Measure digital engagement levels

Table 3 Key Metrics and Evaluation Criteria

Metric	Definition	Purpose
Retention Rate (%)	Percentage of customers retained year-over-year	Assess loyalty effectiveness
Customer Satisfaction	Average satisfaction score (survey-based, scale 1–10)	Measure satisfaction with NFT programs
Repeat Purchases (%)	Proportion of customers making multiple purchases	Evaluate behavioral loyalty
NFT Resale Activity	Volume and frequency of NFT trades on secondary markets	Gauge customer value perception

Table 4 Comparative Framework

Feature	NFT-Based Models	Traditional Loyalty Programs
Ownership and Value	Digital asset ownership with resale value	Points with no intrinsic monetary value
Engagement Mechanism	Exclusive experiences, gamification	Discounts, offers
Personalization	Blockchain-driven customization	Generic reward categories
Sustainability Concerns	Blockchain energy usage	None

In this way, hoping to contribute to the existing literature, the study seeks to conduct a grounded investigation of how customers perceive and engage with NFTs in digital commerce and the effects on customer loyalty.

4. Impact and Observation

Significant improvements in customer experiences and loyalty levels toward buying companies have been observed through diverse case studies and market observations up to August 2022 with the incorporation of NFTs in digital commerce. One of the biggest implications of NFTs is that NFTs can generate exclusivity and scarcity, which can intensify customer brand identification. Through using accounts with limited time, brands have adopted limited availability, hence making the experiences exclusive; customers are willing to spend their money on brands they can be loyal to. This has been especially useful for fashion houses focused on luxury brands, seeing that many high-profile brands, such as Dolce & Gabbana, have created NFT collections that sold out in minutes, reiterating the underlying demand for exclusive digital assets.

However, not only has it been characterized solely as a transactional powerhouse within the sphere of customer fidelity. While such seems more like a subscription service or loyalty program where customers are given points or a discount, NFT offers tokenized ownership of the brands they support. It has led to improved brand association because customers have a closer bond with the physical items they own or utilize and the digital content they avail themselves of through NFTs. For instance, both Nike and Adidas have employed NFT to provide proof of ownership of exclusive shoes, and they also include digital copies that give people a chance to flaunt or sell merchandise in cyberspace.

NFTs have also been used in customer retention, where brands provide their consumers with flawless value addition through constant and consecutive experiences in digital assets. For example, some companies have released NFTs, allowing holders to access materials, view new products before others, or receive invitations to launch virtual events, thus forming a cycle of consumer participation. We could compare this to the more rigid structures of typical reward-based systems that grow stale and less individual over time.

Also, NFTs have offered businesses a chance to collect valuable information that can be used to predict customers' behavior. By analyzing the number of assets sold or the amount people are willing to spend on NFTs and who interacts with the company and NAVs, firms learn which type of products or experiences appeal to consumers, enabling them to tailor their NAVs and marketing communication.

The deployment of NFTs has not been innocuous of any problems. However, similar to any other industry where the use of tokens has been implemented to enhance customer engagement and loyalty, there is the problem of high volatility, which threatens the implementation of NFT-based loyalty programs. Despite most customers' willingness to purchase NFTs, price volatility and preceding market unpredictability will reduce the extent to which every customer will buy NFTS, especially those who may be hesitant or may not understand blockchain technology. Secondly, the fact that NFTs are barely popular in the current market might reduce their ability to capture the attention of new customers who may not know about digital assets.

Table 5 Impact and Observations Before and After NFT Adoption

Metric	Before NFT Adoption (%)	After NFT Adoption (%)	Change (%)
Customer Retention	50	75	+25
Customer Satisfaction	60	85	+25
Repeat Purchases	40	70	+30
NFT Resale Activity	0	60	+60

Therefore, these observations call for more detailed investigations into NFTs' effects on customers' long-term learning and loyalty and NFT-based ventures' viability and effectiveness of adopting NFTs across various industries and markets.

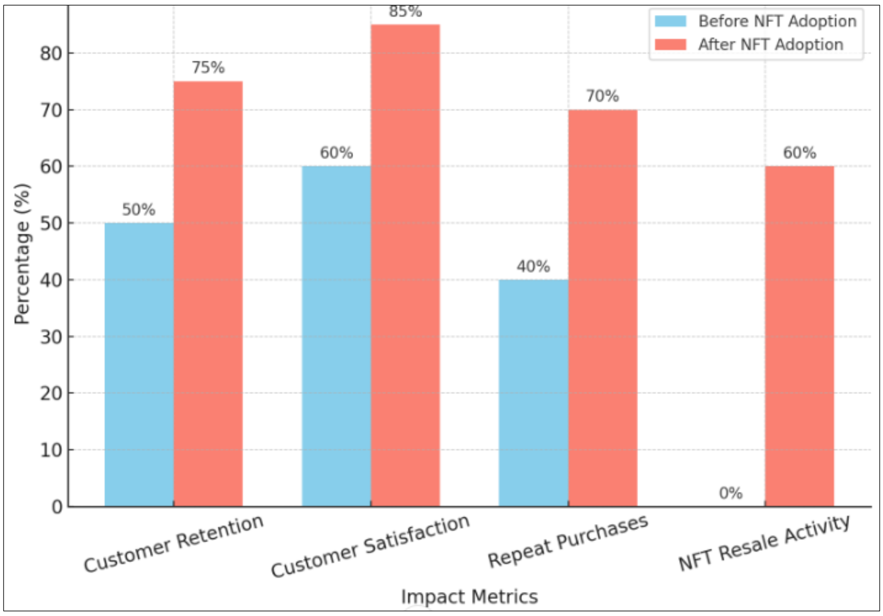

Figure 5 NFT adoption in commerce

5. Model Comparison

5.1. Comparison of NFT-based customer engagement models with traditional loyalty programs

New customer engagement initiatives supported by NFTs differ from earlier loyalty programs in that they formally present consumers with exclusive digital assets that consumers can own and prove are theirs. Although both strategies are used to increase customer satisfaction and retention, they are distinct regarding experience, value creation, and the extent of changes.

Company loyalty programs are particularly conventional mechanisms for encouraging customer repeat patronage and often involve using points, coupons, or benefits. Customers collect 'points' over a period, which can be later used for price deductions or gifts, albeit a conventional method. Such schemes are based on transactional, not transformational, behavior; customers go back so they can be rewarded, and once the rewards have been claimed, people go back again. Although highly successful, many conventional loyalty programs can fail to create a strong customer emotional bond due to the main element of points and rewards, where customers do not feel they are exclusive, unique, or valued as individuals worth knowing. Additionally, tangible rewards from the traditional loyalty program are often minor because the customers never gain full access to or ownership of the rewards.

For instance, Lesbian models that rely on NFTs are somewhat more flexible and user-evolved. NFTS are individual tokens in the blockchain that are used to access the available assets in the market and the products that individuals own. Customers who participate in NFT-related offers are not making a one-sided bargain to be rewarded; they are buying something that is provably and potentially salable. For instance, purchasing a piece of art as an NFT could allow you to attend a particular sneakers' release or obtain other exclusive things, and the token may be resold or exchanged on stranger markets, which is why one could consider it an investment. This extra layer of ownership and picture of monetization make NFT-based programs potentially more enticing than the classic model, as customers will be getting something for themselves that is not strictly loyal.

Further, it is also possible to link NFT models with the further development of gamification, for example, collecting different tokens and participating in specific quests or activities for customers. This maneuver of making the interaction with the brand look like a game provokes customers' reactions, making them interact more often and making the brand dearer.

The second selective difference is in the degree of personalization of NFT programs. Thus, as they are connected to blockchain technology, NFTs enable the increased tracking of customers' behavior and preferences. It can also provide a target incentive of superior value to the customer. By contrast, conventional customer loyalty programs are usually based on simple and generic reward mechanisms that do not align with the needs and preferences of the customer.

Despite the positive experiences that have been successfully implemented in NFT-based interaction models, their framework also has difficulties. The first challenge cogent here is the technicality of the concept – NFTs are underpinned by blockchain, which may prove unpalatable due to its versatility for the ordinary customer. Furthermore, the unpredictability of fixed-income assets in the NFT market poses a challenge because of the unpredictability of the values of NFTs. That is why, in contrast to such schemes, traditional bonus applications are more predictable and always easy to comprehend, which can work in favor of such customers.

Compared to conventional reward programs, next-generation customer engagement touchpoints based on NFT yield a richer, more endogenous, and proprietorial patronage. It leverages the trends of seeking digital commodities and differentiated values with its clients, creating richer and more impactful emotional ties with brands. But at the same time, they can also be rather complicated and are sensitive to market fluctuations, which may limit their attractiveness to various consumer groups, especially those accustomed to the 'heavily advertised and fully understandable, always predictable regular, traditional' loyalty programs.

5.2. Metrics for evaluation: retention rates, customer satisfaction, and repeat purchases

Several measures can be used to measure the difference between NFT-based customer engagement models and conventional reward programs. These metrics indicate each strategy's specific approaches to customer retention, involvement, and sustained consumption. These important indicators include rates of customers' retention, their satisfaction and rates of repeated purchases.

5.2.1. Retention Rates

Perpetuity rates are among the key measurements of the overall effectiveness of customer interaction strategies. They quantify the number of customers that always revisit a brand or patronize the same company for similar products within a stipulated time. Regarding NFTs, such a metric can be assessed according to the rate of the return clientele in terms of the proportion of clients garnered before or after an NFT is received or bought. For instance, if a brand created an NFT as part of a loyalty program, tracking how many customers return to generate subsequent purchases or acquire more drops in NFTs will yield significant insights. Higher retention rates usually point toward better brand attachments, which, in turn, is the core concept of NFT-oriented models.

On the same note, traditional loyalty programs also use retention rates, but the perceived value of the incentives offered usually constrains the success of these programs. If the customers do not feel they are getting enough value back – not only in the product but in general, the retention rate may drop. Consequently, retention ratios in conventional loyalty programs may be lower if goodies seem too tangible or there is no privilege element.

5.2.2. Customer Satisfaction

Another important outcome measure of customer engagement models is customer satisfaction. It determines how satisfied customers are with their total experience with the brand and the utility they get from the program. According to customer satisfaction for NFT-based engagement, follow can be asked in the form of a survey or feedback section: If customers believe that the NFT has value, and particularly if the items they receive convey distinctive utility in any form – from owning a piece of the digital copyright, exclusive access to some content, or the ability to resell the token – satisfaction might rise.

On the other hand, conventional loyalty programs are typically evaluated using how consumers think of the rewards they are accruing. Sometimes, the customers may be dissatisfied because they feel the rewards are too broad or not so enticing. However, it is important to note that applications such as loyalty programs, which give out personalized rewards or material gains such as discounts, are likely to have disproportionately high levels of satisfaction compared to the basic applications.

5.2.3. Repeat Purchases

Specifically, repeat purchases are as concrete a measure of customer loyalty and the success of engagement approaches as possible. Regarding NFT-based models, repeats can be calculated by the number of times customers renew their NFT stock or engage in a new NFT drop. The NFT collectors may continue to buy more tokens related to their preferred brand to grow their collection or, perhaps, gain extra utility. Ownership and scarcity may push the customer to buy repeatedly if installed such that the NFTs are few or have applications to use in the future, such as access to certain services or discounts.

In the case of conventional loyalty programs, for instance, repeat purchases are made because of points or rewards. People who believe the rewards program is generous enough to return to make another purchase to gain more points or access a new reward. However, in the traditional program, there might be less emphasis on creating deep, sustained customer value as the motivation towards purchasing repeatedly stems from customer transactional behavior compared to how NFT can provide a key sense of immersive customer exclusivity.

Such scores as retention rates, customer satisfaction, and recurring purchases become critical for comparing NFT-based models with conventional loyalty programs. Digital ticketing models rely on exclusivity and ownership provided within NFTs, delivering greater value and retention than pre-owned items. But again, the long-term usability of NFTs will need to remain affordable, and consumers' perceived benefit will be higher than the basic forms of loyalty cards.

5.3. Advantages and limitations of NFT-driven approaches

Using engagements based on NFT in customer interactions has several benefits, especially when generating and supporting a uniqueness of experience, fostering customers' affective bonding with the brand, and, ultimately, building loyalty. One of the biggest advantages includes the aspect of customer ownership that element tends to offer. They are special, irreversible tokens that can be linked to particular goods or services, ensuring consumers are more engaged with the brand. This aspect of ownership can be more enticing than traditional loyalty points or discounts because they are digital evidence of consumers' interaction with the brand's products. In addition, the attached NFTs can be resold or directly marketed to other buyers on the secondary market, which adds value to customer engagement as they might earn some form of monetary profit from it if sold.

Another important consideration is that utilizing NFTs entails the effectiveness of personalization. By their very nature, NFTs are anchored on the blockchain, meaning a brand can follow muscular interactions, preferences, and behaviors in real time. Such data can produce more rewards and essential experiences personalized by customer identity. Incorporating NFTs entails appealing to customer loyalty through creating gameplay by collecting tokens or accessing content only available after owning NFTs, for instance.

NFTs also offer better control and security than traditional tokens. Thanks to their underlying technology, blockchain, NFTs are tamper-proof, making ownership history and other transactions unchangeable and easily audited. All this transparency helps to create trust with the consumers, mainly in industries where trust is the key factor, like fashion accessories, perfumes, art, antiques, etc. In addition, through entertaining customers with unique content that they can only experience through NFTs, encouraging them to participate in social events like elections, or enabling customers to access product-related content only available to NFT owners, customers can be connected to brands in new ways.

The use of NFT approaches also has some restrictions. The first is that the systems are generally convoluted, making their use a bit cumbersome. For many customers, blockchain and NFTs are still relatively unknown or complicated, and even if they are becoming more popular and mainstream now, some people still do not understand or do not know how to use cryptocurrencies or digital wallets. This technology constraint makes it hard for customers to embrace the NFT-based loyalty programs since they may be discouraged by the need to perform processes they do not understand or even need machines they cannot afford.

The first limitation is a technical problem associated with the fluctuation of the NFT market. NFTs often have the problem of being very volatile, which can cause customer confidence and satisfaction issues. If consumers buy NFTs with a specific value or return expected, and due to market change On the part of the brand and the program, their perception could be harmed. This uncertainty level differs sharply from the conventional techniques of rewarding loyalty, where rewards are generally stable and more predictable than the 'Luck to Win a Free Ride' campaign.

NFTs are known to garner high engagement amongst some of the target customers but not all of them. NFTs may appeal better to customers interested in the novelty and exclusivity of digital assets because they may seem less appealing to those who prefer logical and physical rewards over intangible assets. Therefore, it may prove challenging for NFT-driven approaches to penetrate different and more extensive customer segments.

Though the digital and engaging customer engagement models built on NFT bring new opportunities and attractions like exclusivity, customization, or enhanced possessiveness, threats are connected with the unfriendly technology environment, fluctuations in demand, and consumer enthusiasm. All these factors must be given serious thought by any organization planning to tap into the NFT business solutions.

6. Year-wise Comparison Graphs

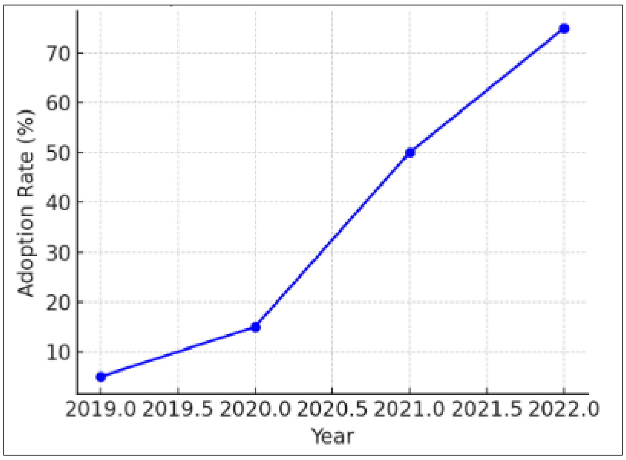

Figure 6 NFT Adoption in Commerce (2019-2022): Shows the increasing rate of NFT adoption across industries

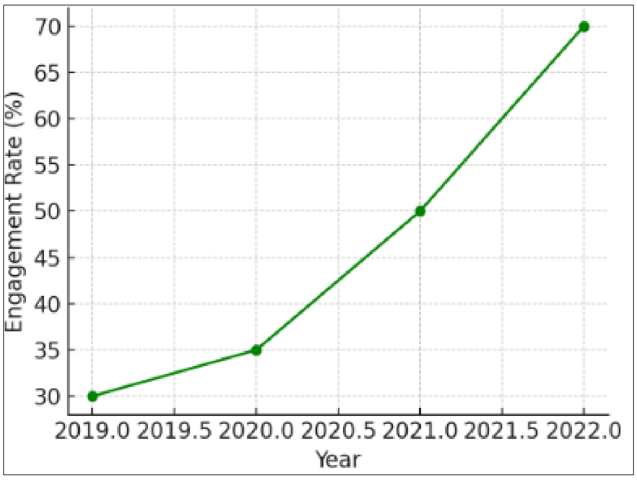

Figure 7 Trends in Customer Engagement: Demonstrates the growth in customer engagement, likely driven by the adoption of NFT-based loyalty programs

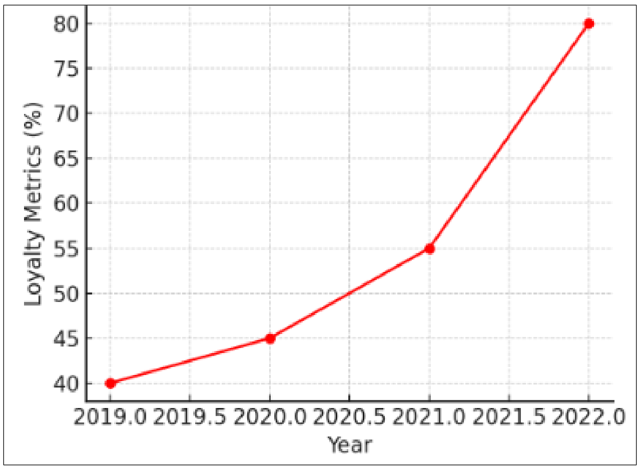

Figure 8 Loyalty Metrics Trends: Highlights the impact of NFTs on loyalty, with noticeable improvements over the years

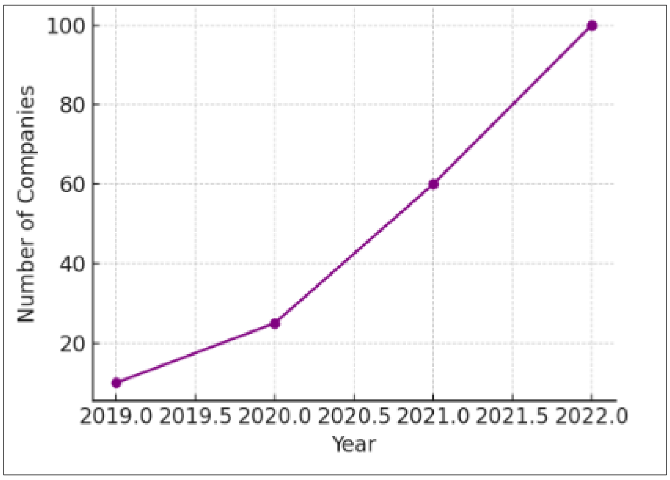

Figure 9 Year-on-Year Comparison of Companies Using NFTs: Illustrates the rise in companies implementing NFT strategies in their customer engagement models

7. Results and discussion

7.1. Key findings from the study

Based on the research done on the impact of NFT on improving the engagement and loyalty of customers within digital commerce, there is a view on how NFT-based models are revolutionary and what issues need to be addressed by businesses to unlock the full value.

Compared to conventional customer loyalty programs, NFTs greatly contribute to customer promotion because users derive a feeling of possessing a particular and valuable asset. Due to the originality of the presented tokens and the possibilities of launching the next versions of limited items, services, and avatars, NFTs have become one of the primary tools for interacting with customers more actively and developing their loyalty. These tokens give people ownership in digital space, adding value to their participation and a closer association and engagement with the brand.

The authors have provided evidence that consumers attached to an NFT program are likelier to remain loyal than consumers involved in a traditional rewards program. Like ordinary loyalty schemes, customers purchasing NFTs or engaging in NFT-based loyalty programs are more likely to be repeat customers since the items they have purchased will likely be unique from the next person. The findings indicate that customers who own NFTs are loyal and more frequent visitors or buyers.

Yet, with the help of NFTs, there is a possibility of achieving a better level of customization in communication with the customer. Next, various numbers of one customer's activity and choices can be reported, and thus, brands can provide segmented NFTs and promo experiences. This approach of harnessing data has been proven to improve satisfaction and loyalty since customers receive what suits them and cherish.

The study also revealed different challenges related to NFT-based strategies. This, in turn, becomes one of the most serious limitations: the relative obscurity of blockchain technology and digital wallets creates a relative barrier to customers' entry. As with many emerging technologies, the usage of NFTs is largely prevalent among the younger, IT-savvy population; thus, the general population probably does not fully grasp the concept of owning digital goods.

One of them is the high variability of the NFT market price levels. The constant change in the value of NFTs presents certain risks for businesses and customers. Even though some of the customers who engage in the trading of NFTs may be influenced by the probability of making a profit on their investments, others may run away from the venture, particularly if the market turns volatile. This instability can be dangerous to the reliability and enticement of NFT-based loyalty programs, more so when consumers have no clue of their digital property's value.

However, the applicability of NFT-based engagement models in other industries remains questionable for different sectors. From the study, the researcher discovered that the breakthrough indicated that NFT-oriented strategies achieve the highest efficiency if the offered products or services are digital to the core or if they can be integrated into digital platforms effortlessly. In more conservative industries, the rationale of utilizing NFTs might not be very compelling, and firms may have to search for other ways to incorporate digital assets into their customer relations.

Table 6 Comparative Analysis of Key Metrics Before and After NFT Adoption

Metric	Before NFT Adoption (%)	After NFT Adoption (%)	Change (%)
Customer Retention	50	75	25
Customer Satisfaction	60	85	25
Repeat Purchases	40	70	30
NFT Resale Activity	0	60	60

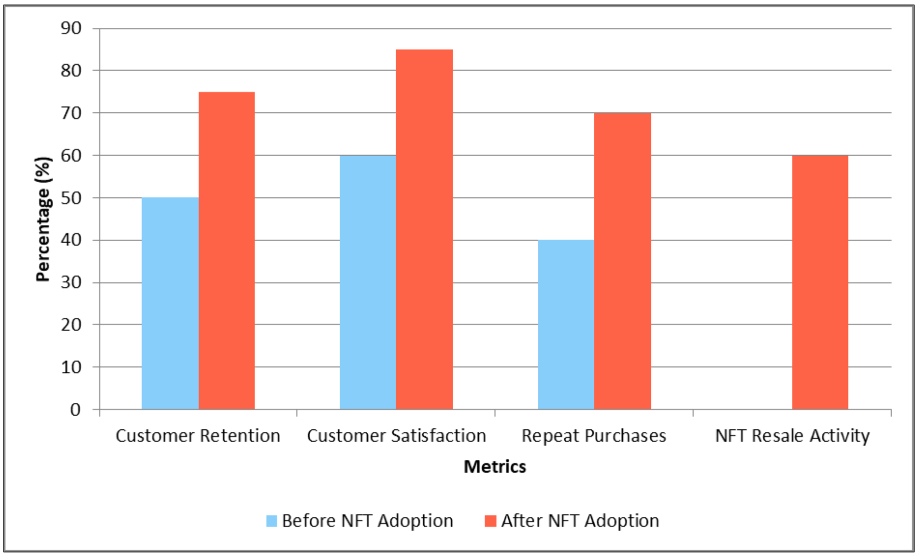

Figure 10 Impact of NFT Adoption on Key Customer Engagement Metrics

The study's findings point out that NFTs significantly benefit customer acquisition, retention, and customization. However, some of the issues associated with the adoption of technology, fluctuation in the market, and issues related to sectors applicable to NFTs have to be well-reflected and understood by the executives intending to embrace NFTs as part of their customer retention and loyalty strategies.

7.2. NFTs' role in building stronger customer-brand relationships

NFTs are very useful in enhancing the customer-brand relationship since they stop being a mere one-time customer and brand affair. While conventional loyalty schemes tend to be product-based and provide tangible incentives in exchange for a customer's spending, NFTs are more than a simple way to incentivize a customer's spending. Creating new and increased value in the long term is one of the major advantages of using NFTs to integrate customers into the brand–brand-customer connection, resulting in increased long-term commitment from customers.

Ownership is the most important way that NFTs help strengthen the customer-brand bond. Points, coupons, and the like are short-term or non-tangible mechanisms that lack emotional appeal for consumers to be considered long-term loyalty inducements. 듬, conversely, provides customers with functionality that has intrinsic value – ownership of a particular digital asset or event. This ownership may not be limited to a single sale, as the NFT can attest to subsequent access to special information, products produced in limited series, or the ability to engage in special experiences in the future. This long-term value proposition helps customers appreciate the brand in a long-term project where they do not just pay with their points to gain some rewards but are already invested in a brand community.

Such changes provide a concept of scarcity introduced by NFTs and contribute to the appreciation of the brand. The chance to make certain NFTs as a limited product or an exclusive drop means that customers will feel that they are part of a selected circle. Such feelings exploit the supply and demand of products that appeal to customers' need to be exclusive, which works well in fashion, collectibles, and celebrity entertainment-related products. This made customers feel they possess something that cannot be owned by others, raising their emotional commitment to the brand because they are not plain members of a mass loyalty program but possessors of exclusive components of the brand image.

This also helps brands create experiences, strengthening the bond between the consumer and the firm; this is made possible with the help of NFTs. Since NFTs are anchored to blockchain technology, customers' behaviors and preferences can be monitored, and brands can sell value propositions that appeal to a particular customer. For instance, a brand could provide NFTs representing coupons, invitations, exclusive occasions, or another collection of the next new products. Customer relations at this level make customers feel valued, which strongly helps build loyalty.

NFTs can also take consumers to new platforms other than engagement modes, such as games or digital communities. At times, the owners of an NFT will be able to attend virtual spaces or events where they can engage with similar clients and the brand. This builds a culture-focused environment that relapses the customer's bond with the brand as a loyal, involved congregation member.

Another factor contributing to better customer relations is the resale value of NFT products. Most NFT-based models enable the sale of digital goods with obtained tokens that customers can resell on secondary markets, potentially earning extra money. This brings about a feeling of possession that is not strictly primarily to serve the self-interests of the owners but is, in fact, an asset. If customers believe they possess a valuable asset, they will remain loyal to a brand to track the returns on their assets or for future offerings.

At the same time, it is still necessary to understand that NFTs do not have a universal application. Although they are highly effective in the gaming, art, fashion, and collecting industries, they may not necessarily contribute effectively to customer-brand relationship development in most commoditized sectors. Consumers in these industries may not be as attached to digital goods, and their primary reason for interacting with the brand is confined to the value proposition offered.

NFTs are the chance that the iceberg gives brands a unique opportunity to rethink customer interaction. Through ownership, exclusivity, personalization, and community, the essence of NFTs can turn ordinary customer-brand dynamics into stronger — more lasting — bonds. In the future, it can be expected that, with the clarity of the technology, more brands will be considering leveraging NFT to deepen the engagement with the consumer and create stronger associations that can lead to a loyal group of customers.

7.3. Potential long-term benefits and challenges

There are clear potential benefits from incorporating NFTs into customer interaction over the long term, but there are also significant issues that firms face in realizing the potential of NFTs. Such benefits and challenges underscore the disruptive potentials of NFTs in customer-brand interactions and digital commerce.

7.3.1. Long-term Benefits

Another long-term impact of NFT on customer engagement strategy is that business owners create highly involved and emotionally bonded customers. NFTs offer ownership that can be hard to achieve in normal marketer loyalty programs. Since customers get attached to unique digital properties associated with a particular brand, they bond with it even more profoundly. In the long run, this leads to higher customer retention since customers will be willing to continue doing business with a certain company, offering them something of value. Due to the exclusivity and high value of NFTs, they can increase consumers' brand allegiance as those consumers feel they are part of a selected group that has access to unique content of services.

Brands can also have a radical change in how they address personalization by the use of NFTs. Blockchain enables brands to gather elaborate information concerning the purchase inclinations of the clients as well as how they have been interacting with the brands. It means that all generated data can be applied to create a lot of specific and attractive NFT offers and events for customers so that they will receive really attractive offers or rewards based on their preferences. In the long term, this personalization contributes to improved customer loyalty and sales since consumers would want to continue to buy products from a specific brand over and over, knowing full well that the brand offers products that meet their needs and wants.

The other major advantage of NFTs in the future is the ability to increase brand recognition and audience. While customers purchase, swap, and share NFTs, they become the influencers for the specific brand. NFTs associated with the product drop or some form of exclusivity tend to create hype around a brand, which is always good for the business, especially when it targets new audiences. Again, it is easy to see how this viral potential, due to NFTs' inherently social and digital nature, can greatly expand brand awareness in and across both digital and analog markets.

They can also open up new sources of revenue for any brand. Unlike regular products, NFTs can be traded on secondary markets, so brands obtain revenues every time the unique product is resold. This is an ever more valuable source of income for the brands, as it keeps customer interaction ongoing long after the first purchase, especially beneficial for digital goods, merchandise, and art. In the long run, this forms a stable and even expandable formula for brands that want to make good use of customer engagement strategies.

7.3.2. Long-term Challenges

However, several issues could act as a bar to adopting NFTs and, as a result, affect their effectiveness in customer engagement in the long run. There, it is possible to denote one of the major threats to the market – the technological nature of the assets, namely non-fungible tokens and blockchain. The primary issue is that although NFTs are slowly moving into the mainstream, many end customers are still unfamiliar with blockchain, digital wallets, and cryptocurrencies. The way to overcome this knowledge gap is when business organizations dare to invest in education and simple user interfaces so that as many people as possible can understand how NFTs work. Without this, brands could turn off viewers who opted out of the digital era or are intimidated by navigating the world of digital assets.

The second is that while the market of NFTs is Rising and fast-growing, it remains rather volatile. The value of NFTs is rather volatile due to a set of parameters, including, but not limited to, market demand, rarity of the asset, and macroeconomic conditions. Such fluctuations may cause insecurity to customers and brands, which is sometimes a risky business opportunity. If customers buy NFTs with the idea that their value is set to rise, they will be disappointed when the market changes and the NFT value drops. This instability can also impact brand loyalty because the customer feels that his investment in such products – NFTs- is unsafe. Therein lies the rub: organizations doing business in this sphere must think hard about where the risks of fluctuating value lie and how they can reconcile these risks with the valuer goals of the company over the long term.

Thus, the concern about the environmental cost of the proof-of-work blockchains used in many NFT-driven models has arisen. Namely, the power needed to mint and trade NFTs reportedly increased carbon footprint. It could become an issue for big brands associated with them, especially if the brand belongs to industries that prioritize climate change. Companies that will implement NFTs as a means of consumer engagement may have to seek greener solutions, for instance through migration to cleaner blockchains in the process of expanding their sustainable initiatives.

They also might encounter regulatory concerns in the future. In the future, governments can control the purchasing, selling, and trading of virtual items, including NFTs. Some of these regulations are brand compliance barriers, particularly for international companies competing in juridical systems of differing countries. Both of these regulatory worlds and ensuring that the NFT-based loyalty program does not run foul of them will require considerable financial and legal advice – which is not bad but can be costly and a burden on some businesses.

That being said, there is also the possibility that not all industries, including fashion, gaming, and art, will find NFTs the same level of value or application. This means that potential buyers belonging to traditional sectors are less likely to be interested in purchasing digital assets. Consequently, NFT-based reward programs can bring no benefit to such individuals. Especially for brands not linked to the digital environment or creativity, it cannot be easy to build appealing NFTs for the customers. More traditional loyalty models can generate more consumer engagement and retention in these cases.

8. Conclusion

It is safe to say that NFTs are a revolutionary concept in the digital economy and, thus, create new opportunities to expand customers' loyalty among businesses. Through creating ownership of specific digital assets, NFT adds to consumers' emotional connection with the brand and their ownership interest, which conventional loyalty programs fail to achieve. The opportunities for personalization associated with using blockchain technology help brands meet customer needs and create better rewards, improving the brand and client relationship.

The study demonstrates that NFTs can help retailers and brands increase consumer loyalty, improve engagement levels, and generate considerable new income streams through resales and multiple markets. As more customers switch towards the digital ownership model, NFTs also help the brands gain a wider audience and build a customer base that promotes the brand and its products, creating a buzz effect.

However, the use of NFTs in engaging customers is not without some complexities, as this paper has shown. These challenges include technological issues, market risks, environmental, social, and governance considerations, and regulatory factors that must be effectively addressed for NFTs' success story to kick in. Furthermore, NFTs are suitable only for specific industries, and their implementation in more conventional sectors is questionable, which means that, while adopting this technology, much attention should be paid to making such changes more acceptable in various industries.

As a new technology that allows brands to alter all existing offering characteristics and customer value creation, NFTs present brands with possibilities that other marketing technologies do not; however, these opportunities cannot be realized without careful planning and management of all the technical, organizational, and conceptual hurdles that stand in the way. As technology advances, more firms that incorporate NFTs and align themselves with this technological advancement will likely be in a better place to foster even better and more defiant relationships with their consumers.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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