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Overview of Challenges of NFT Marketplaces and Introduction to Elixer

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Abstract: ***The NFT marketplace is a bustling arena, where individuals can buy, sell, and exchange Non-Fungible Tokens (NFTs). Much like a stock market, NFT marketplaces allow for the buying, selling, and trading of digital assets. In this research paper, we delve into uncharted territory by proposing a revolutionary approach to trading NFTs - the utilization of in-app coins, low gas fees, and a centralized network. We scrutinize the current NFT marketplace landscape, highlighting the most popular platforms and the dilemmas faced by users. Our research begins with a comprehensive overview of NFTs and how they differ from other fungible digital assets. We then present a novel method of trading NFTs, which utilizes in-app coins, aimed at improving the performance and usability of the marketplace. However, it is important to acknowledge that this new approach is not without its drawbacks, and we will examine them in detail. The implications of NFT marketplaces and digital ownership are far-reaching, encompassing both environmental and legal concerns. This research paper provides ideas applied in the use cases of industries towards innovative growth.***

Keywords: NFTs, NFT marketplace, trading, in-app coins, a new method of trading NFT.

I. INTRODUCTION

NFT is a unit of data stored on a blockchain that certifies a digital asset to be unique and therefore not interchangeable, while offering a unique digital certificate of ownership for the NFT. Each has a digital signature that makes it impossible for NFTs to be exchanged for or equal to one another.[1] More broadly, an NFT allows to establish the “provenance” of the assigned digital object, offering indisputable answers to such questions as who owns, previously owned, and created the NFT, as well as which of the many copies is the original.[2] Physical money and cryptocurrencies are “fungible,” meaning they can be traded or exchanged for one another.[1] They’re also equal in value—one dollar is always worth another dollar; one Bitcoin is always equal to another Bitcoin. Several types of digital objects can be associated to an NFT including photos, videos, and audio. NFTs are now being used to commodify digital objects in different contexts, such as art, gaming, and sports collectibles. Originally NFTs were part of the Ethereum blockchain but increasingly more blockchains have implemented their own versions of NFTs. [2]

The NFT marketplace has been the scene of unprecedented sales, with digital art and collectibles fetching millions of dollars. Take, for example, the sale of Fvckrender's NFT artwork for a whopping $1 million in December 2020. And in March 2021, Beeple set a new record with his NFT artwork selling for an unprecedented $69 million at a Christie's auction. Beeple also sold another NFT artwork for $6.6 million on Nifty Gateway in February of the same year. The year 2021 saw digital artist Fewocious sell an NFT artwork for a dazzling $777,777 in January. And in early 2022, Client Crypto Punks sold for a staggering $23.58 million on February 11th.

However, the market's rapid ascent was not without its challenges, including high gas prices, a lack of accessibility, and difficulties keeping up with the fluctuating cryptocurrencies on the decentralized blockchain. To address these issues, this research paper introduces a novel approach to NFT trading that utilizes in-app coins, low and flat gas fees, and a centralized system integrated into a mobile application. This eliminates the need to use a browser for NFT transactions, offering all the necessary information in one place, aimed at improving the user experience, reducing friction, and increasing accessibility for new users.

A. In-App Coins

In-app coins or virtual currency are the digital currency used within a specific mobile application or online platform. A virtual currency is not precisely electronic money. The main differences are the lack of a physical equivalent, the lack of legal regulations by central banks, and the lack of specific control by state authorities [3]. It can be divided into two categories in terms of value: significant and insignificant. For instance, Monopoly money has value within the game, but it becomes an imaginary good in the real world. A significant currency can be exchanged for real money and thus influences reality [4].

Earnings in virtual worlds can be categorized as legal or illegal. [5] Virtual currency represents a revolutionary shift in the way we conduct transactions within online and mobile platforms. These digital currencies are designed to streamline the purchasing process, enabling users to make purchases with ease, without the need for traditional forms of payment like credit cards or bank transfers. With the implementation of in-app coins, transactions become faster, smoother and more convenient for users. Moreover, virtual currencies serve as a potent motivator for users. Applications can offer in-app coins as a reward for completing specific tasks or reaching milestones, which encourages users to spend more time within the app and make additional purchases. In-app coins also offer a secure form of payment. Transactions made with virtual currency are processed within the application, reducing the risks of fraud and other security concerns associated with traditional payment methods. The use of virtual currency is a gamification technique that is gaining popularity as a means of monetizing digital content and services. This innovative approach is being adopted by social media platforms, online games and other digital platforms to enhance the user experience and drive revenue.

B. Low And Flat Gas Fees

Gas fees, a payment that must be made by blockchain users to compensate validators who process transactions by staking ETH, are a crucial aspect of the Ethereum network. These fees are comprised of two components: the gas price and the gas limit. The gas price, denominated in Gwei (with 1 Gwei equal to 0.000000001 ETH), represents the amount of Ether required per unit of gas. Meanwhile, the gas limit, expressed in units of gas, is the ceiling of the maximum gas that can be utilized for a transaction. To determine the total gas fee for any given transaction, one simply multiplies the gas price by the gas limit. One should also keep in mind that these fees can fluctuate, depending on the current demand for the network and the available supply of Ether. A drop in cryptocurrency value means lower purchasing power, which is likely to depress the NFT market. Conversely, when cryptocurrencies appreciate, investors tend to look for new or alternative investment opportunities.[6] Further, the concept of gas fees is critical. Two prevalent methods for determining these fees exist: flat gas fees and variable gas fees. Flat gas fees, as their name suggests, are a fixed cost per transaction, regardless of network conditions. In contrast, variable gas fees adjust based on network demand and Ether availability. To combat this fluctuation and ensure consistency, our research introduces a new approach: reduced, flat gas fees facilitated by in-app coins within a centralized network. We delve into the use of flat and low gas fees in NFT marketplaces, evaluating its impact on the market and accessibility for users. Our analysis also compares this method to traditional NFT trading with variable and high gas fees.

C. Centralized Network

A centralized blockchain network is a system where a central entity - whether an organization or an individual - has control over the network's maintenance and operation. This central authority has the power to verify and validate transactions, making the process faster than decentralized networks. Additionally, the central entity holds the responsibility of creating and issuing new digital assets or currency units. It gets a comprehensive overview of the network, the ability to program and update forwarding rules dynamically, and software-based traffic analysis. Unlike decentralized networks, the central authority can enforce security measures to prevent fraud and hacking, ensuring the network's legitimacy and conformity to established standards. The central entity must be held accountable for its actions and ensure the network's security and stability, striking a balance between efficiency and decentralization. Despite its disadvantages, a centralized blockchain network remains a viable option for organizations seeking to streamline operations and transactions.

II. MARKET STUDY

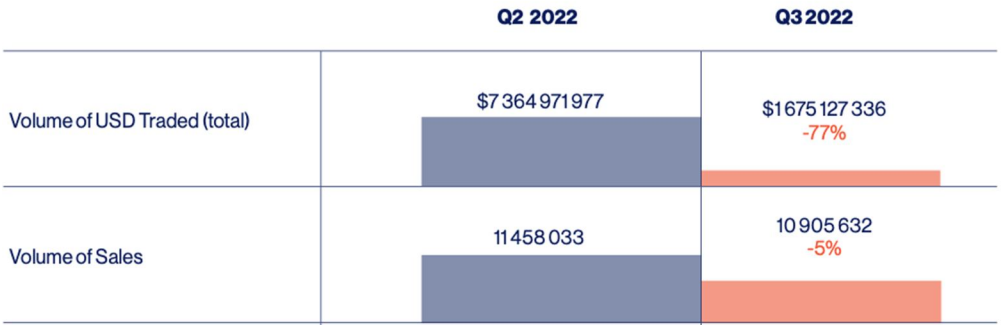

Fig. 1: Volume of USD Traded and Sales in Quarters 2 and 3 in 2022[7]

The NFT market's rapid growth in 2021 was followed with market saturation, causing a decline in volume, as depicted in Fig.1. The hype surrounding NFTs faded as they failed to meet public expectations, leading early NFT investors to sell their collectibles. The selling spree caused a drop in active users on NFT platforms and a decrease in NFT transactions. The sudden boom and bust of the NFT market highlights the importance of sustainable growth and keeping pace with public demand, rather than relying solely on initial excitement and hype.

Due to NFTs' unique characteristics, they are categorized as high-risk assets. This type of asset suffers most in an increasingly risk-off macroeconomic environment as capital flees up the risk ladder towards safer investments.[8]

The NFT market has been facing a downfall in participation and engagement. The reason being the lack of originality and imagination in the NFTs being put on sale, leading to a drop in the efforts from creators. NFTs were perceived as investment opportunities rather than valuable digital assets with practical usage, causing the decrease in involvement. Moreover, the gas fees and scalability issues on the Ethereum blockchain, which also played a part in the complexity of buying and selling NFTs, made it challenging for casual users to participate.

The reach of these platforms is also limited, which reduces the number of potential buyers for an artist's work. Some marketplaces have a small user base and limited customization options, making it difficult for artists to sell their NFTs and stand out from the competition. The absence of community features, like forums or groups where artists can interact with other creators or potential customers and the complex user interface, can make it hard for artists to build a fan base and showcase their work.

The regulatory uncertainty surrounding NFTs and the worries about their environmental impact only added to the decrease in engagement. As the world's governments and regulators take notice of the NFT market, some users may have become cautious of participating due to the fear of future regulations. The energy consumption needed to mint and trade NFTs also resulted in a decrease in involvement.

A. High and Variable Gas Fees

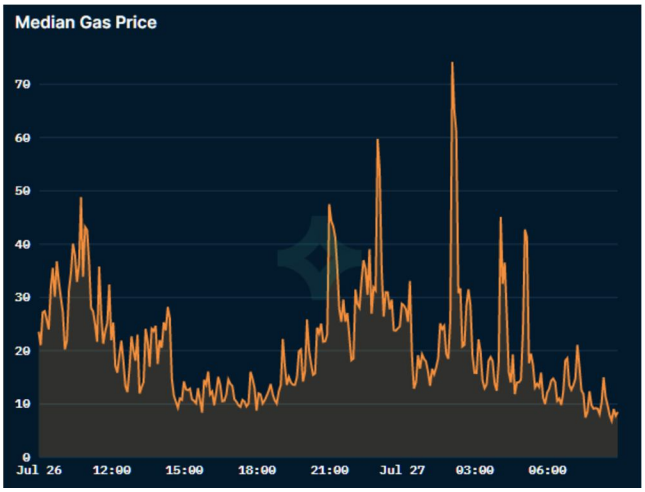

Fig. 2: Median gas price on a day selected at random[9]

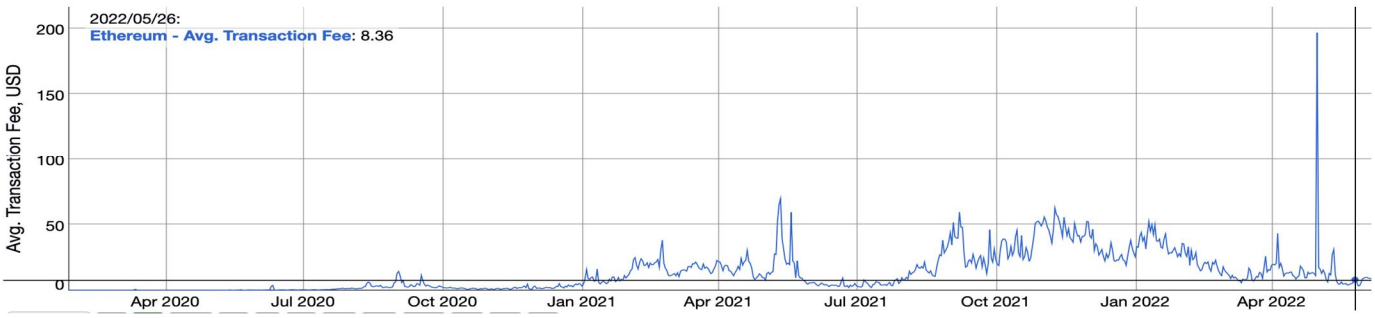

Fig. 3: Variability and increase of Ethereum.[10]

As far as the NFT marketplace is concerned, gas costs are currently the biggest issue, especially when minting NFTs on a large scale that requires storing their metadata. Due to the computational power and storage requirements of blockchain networks, even a straightforward transaction can be very expensive.[11] The skyrocketing gas fees, a hindrance for many NFT marketplace users, have become a thorn in the side for artists seeking to sell their digital masterpieces. Despite the popularity of platforms such as OpenSea, Rarible, Binance NFT and others, these restrictive fees make it difficult for artists to turn a profit. With OpenSea levying a 2.5% fee on all sales, Rarible imposing a 2.5% charge on both buyers and sellers, and Binance NFT exacting a staggering 10% tax on all sales, it becomes clear that these fees can quickly add up. This becomes especially problematic for artists who sell multiple NFTs or have more expensive pieces in their portfolio. The already thin margins of the art market become even more challenging to navigate with these fees. However, the challenges don't stop there. The Ethereum gas fees that influence the NFT listing and selling fees on platforms like OpenSea and Rarible are subject to market volatility. This results in NFT fees that can fluctuate significantly and catch artists off guard, making it difficult for them to budget and plan their sales effectively. In conclusion, the exorbitant gas fees and their unpredictability present a significant roadblock for artists seeking to sell their NFTs on popular marketplaces.

1) *Workaround:* Artists and artisans alike are facing a challenging issue - sky-high transaction fees that often eat into their profits. But what if they had a solution that ensured a predictable and stable compensation structure, allowing them to plan and budget their sales more effectively, then, the concept of flat and continuous gas fees is considered. With this approach, artists will know exactly how much they need to pay in fees, allowing them to compare prices offered by various marketplaces with ease. The emergence of Polygon, Ethereum's Layer 2 scaling solution, has revolutionized the situation by introducing flat and stable gas fees, resulting in a significant decrease in the cost of gas. This opens up a world of opportunities for artists to sell their works on popular Polygon-based marketplaces like Quickswap, Aavegotchi, SuperRare, and others. Similarly, Binance Smart Chain (BSC) has successfully implemented similar strategies, resulting in lower gas prices and making it more accessible for makers and artists to sell their NFTs on the Binance NFT marketplace and other marketplaces established on the Binance Smart Chain. This has led to a surge in the number of creators and artists selling their NFTs. The Solana blockchain is also benefiting from this trend, with a surge in NFT sales as a result of lower transaction costs.

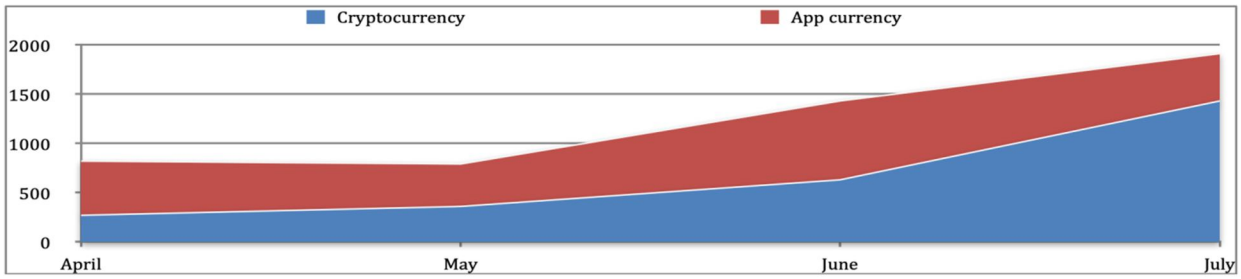

Fig. 4

The combination of low gas fees and in-app virtual currency holds the potential to mitigate the instability of pricing and sales, which has become a major concern in the ever-fluctuating world of cryptocurrency. Our recent survey of 3,000 individuals, the 18-34 age bracket, particularly students, who experimented with in-app currency in Elixer over a four-month span and across various crypto-based NFT platforms, reveals a striking trend. As depicted in Fig. 4, exhibits a robust attraction towards in-app currencies, with a significant portion of respondents finding in-app transactions simpler for NFT trading.

B. Accessibility

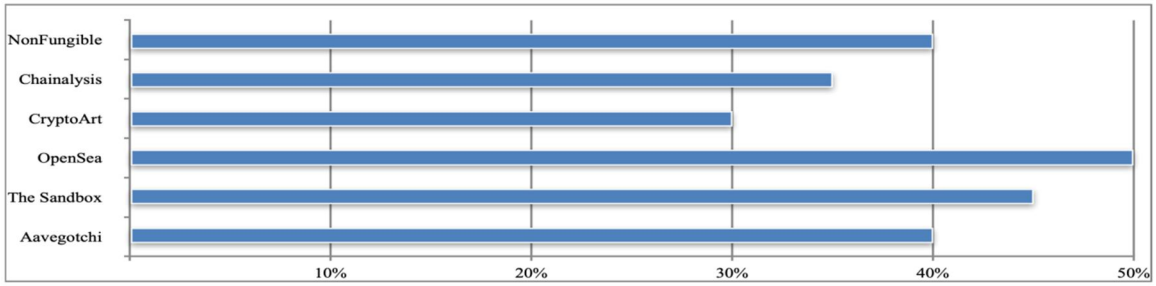

Fig. 5: Percentage of surveyed people who thought poor UI was a barrier to new users.

Complex user interface: The NFT market is facing a formidable challenge in the form of its complicated user interface, which is hindering average individuals from participating. Technical terms like "minting," "bidding," and "trading" can be overwhelming for those new to the NFT world, and lackluster design can even drive users away for good. A survey conducted by NonFungible in June 2021 revealed that only 20% of the 1000 participants found the platform user-friendly and 55% felt it was overly complex, leading to frustration and stress. For artists and creators, the complexity presents a major obstacle in minting and selling their NFTs, as shown in a survey by NFT Art Market in August 2021, where 40% of the 1000 artists stated the interface was a significant hindrance. This complexity not only impacts the platform's revenue, order value, and customer acquisition costs, but also results in increased cart abandonment due to poor user experience. With a small percentage of experts familiar with the workings of these platforms, users are forced to resort to hiring them to buy or sell NFTs, driving up the cost of trading. It has become imperative for NFT platforms to prioritize a user-friendly interface to attract and retain users, ensure seamless participation.

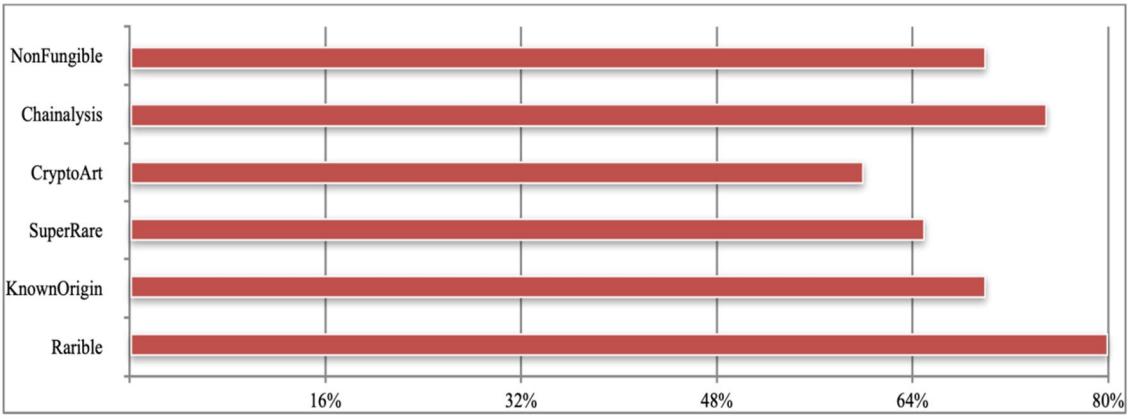

Fig. 6: Percentage of surveyed people who thought platforms had “limited” search and discovery features

1) *Limited Search And Discovery Features*: The current landscape of NFT marketplaces is plagued by limited search and discovery capabilities, making it a challenging endeavor for NFT collectors and enthusiasts to locate the specific NFTs they seek. A recent study by NonFungible.com uncovered a shocking fact: only a mere 3% of NFT marketplaces have functional search features. The majority of platforms only permit users to search through keywords or artist names, failing to provide advanced filtering options such as searching by rarity or edition size. As a result, users are forced to scour through countless pages of NFTs, without any real guarantee of finding what they want. This limitation not only affects buyers but also emerging artists who struggle to gain exposure for their work in a crowded and increasingly competitive market. The high gas prices to boost their newly minted NFTs make it even harder for these artists to break through and reach a wider audience
2) *Limited Accessibility for Countries:* The NFT marketplace is grappling with a critical hindrance that is curbing its growth and potential earnings for artists and creators across the world - limited accessibility. The situation is dire, especially in a few countries such as Africa, South America, and Southeast Asia, where regulation and proper infrastructure are still lacking, thereby making it challenging for NFT marketplaces to establish a foothold and for individuals to partake in NFT trading. The restricted access has disastrous implications on the diversity of NFTs in the market. Fewer artists and creators from different regions can participate, resulting in a monotonous and unrepresentative NFT market lacking in diverse perspectives. The earning potential of creators, particularly those from developing nations, is also hampered as they have to depend on local marketplaces with limited visibility and sales prospects. The problem is compounded in countries with stringent internet censorship, where accessing NFT marketplaces becomes even more challenging, exacerbating the problem of limited accessibility.
3) *Workaround:* The adoption of NFTs can be greatly influenced by the simplicity and user-friendliness of the platform's interface. By incorporating cutting-edge search functionality, powered by natural language processing, computer vision, and machine learning, the user experience can be greatly improved and NFT discovery can be facilitated. Interactive tutorials and videos can also be utilized as visual aids to educate users about NFTs and how to participate in the market, providing a solid foundation for a smooth onboarding experience. The positive impact of UI enhancements is demonstrated by case studies of Nifty Gateway and OpenSea, who both reported a significant increase in sales and user engagement - 40% and 50%, respectively - after launching their user-friendly interfaces and advanced filtering options.

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III. NFT PLATFORMS

A. OpenSea

1) Features

Services: Buy, mint, sell
Blockchains: Ethereum, Polygon, Klatyn, Solana
Wallets: Metamask, Coinbase Wallet, Trust Wallet and more
Gas fees: 2.5% per transaction
Types of NFTs: Art, collectibles, domain names, music, photography, sports, trading cards, utility, virtual worlds.
Top Collectibles: CryptoPunks, Bored Ape Yacht Club, Mutant Ape Yacht Club

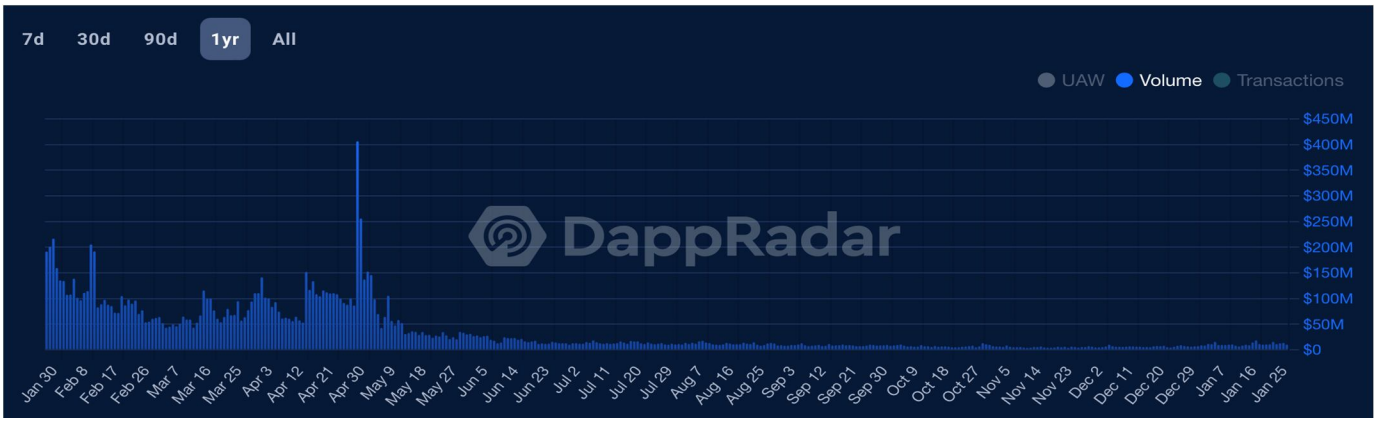

Fig. 7: OpenSea Trading Volume chart of 1 year[12]

2) Origin and Community

Founded in 2017, OpenSea has carved out a reputable niche as a bustling hub for digital merchandise, attracting a diverse array of active sellers, buyers, and traders. With over 4 million unique items and a staggering $250 million in sales under its belt, the platform stands as a testament to its user-friendly interface and robust creator tools, enabling a thriving creator community to flourish and contribute to its daily growth. Not just a marketplace, OpenSea represents a microcosm of sorts, where a wide array of digital items converge - from in-game collectibles in popular video games to one-of-a-kind virtual real estate and digital artwork. The platform's appeal extends to collectors and investors seeking valuable digital items that hold the potential to appreciate over time. In fact, OpenSea has been the site of several high-value sales, including a virtual plot of land in Decentraland that sold for an eye-popping $500,000. It's this harmonious blend of accessibility, creator support, and a thriving community that has propelled OpenSea to the forefront of the digital goods marketplace.

3) Scalability

Decentralized marketplaces, such as OpenSea, offer a wealth of benefits like enhanced security, transparency, and ownership. However, scalability challenges have proven to be a persistent thorn in the side of these platforms, particularly OpenSea, which is built on the Ethereum blockchain.

The limitations of Ethereum have caused increased transaction times and gas fees, leading to a subpar user experience. During high-demand periods, such as the NFT craze of 2020 and 2021, Ethereum block times reached several minutes, which generally last anywhere from 15 to 20 seconds or even hours, making it nearly impossible for OpenSea users to buy and sell NFTs. The exorbitant gas fees, reaching up to $50 or more, further deterred participation in the marketplace.

The root cause of these problems lies in the limited capacity of the Ethereum network, compounded by competition among users for network resources. As demand for these resources increases, so does the cost of using them, resulting in skyrocketing gas fees that affect not only OpenSea but also other decentralized applications built on the Ethereum network.

OpenSea and the Ethereum community are taking active steps to address these scalability issues. One proposed solution involves the implementation of layer 2 solutions, such as rollups and plasma, which aim to improve Ethereum's scalability by moving a portion of the transactions to a secondary layer and reducing the burden on the main chain. This would lead to faster transaction times and lower gas fees.

Another solution under consideration is the use of alternative blockchains, such as Binance Smart Chain, which offers faster transaction times and lower gas fees compared to Ethereum. OpenSea has already taken the lead by launching a Binance Smart Chain version of their marketplace, providing users with a more scalable and affordable option.

While layer 2 solutions and alternative blockchains hold promise as answers to scalability challenges, their effectiveness remains to be seen. However, OpenSea and the Ethereum community remain committed to finding solutions that will enhance the scalability of the platform and provide users with a seamless and enjoyable experience. They are determined to tackle the persistent scalability challenges and bring forth a decentralized marketplace that truly lives up to its potential.

B. WazirX

1) Features

Services: Buy, mint, sell
Blockchains: Ethereum
Wallets: Metamask
Gas fees: 0.1%-0.2% buyer and seller
Types of NFTs: digital art (GIFs, videos, audios, images)
Top Collectibles: 1k collection, Folk scifi, Css club

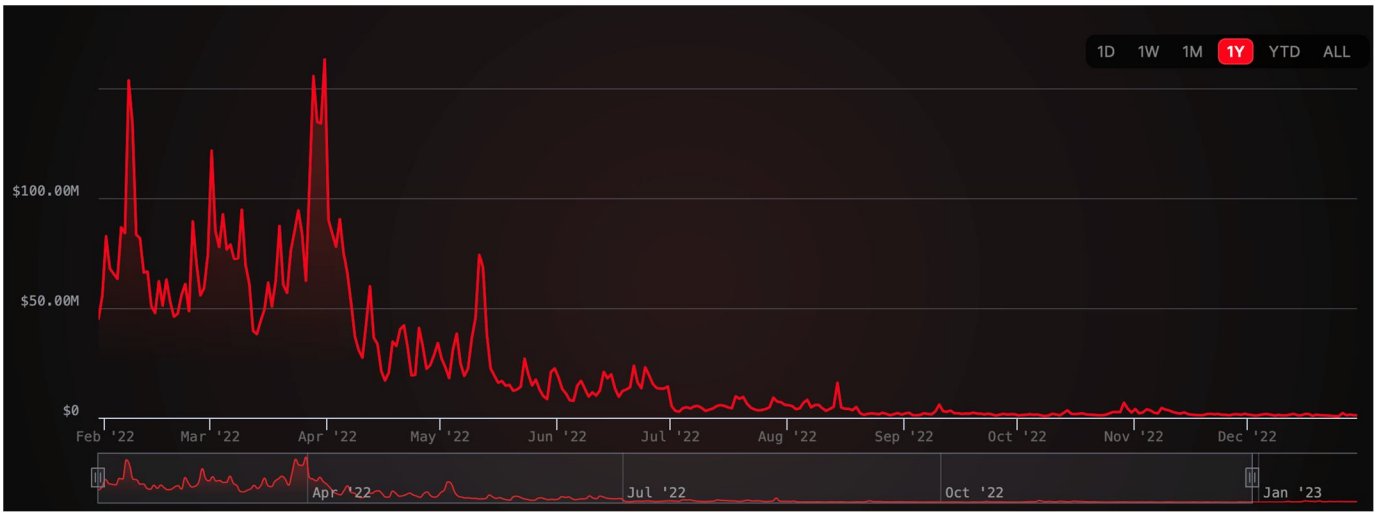

Fig. 8: WazirX trading volume chart of 1 year[13]

2) Origin and Community

WazirX, a pioneering cryptocurrency exchange platform, has made waves since its establishment in 2018. Originating from India, it has rapidly become a support of trust and reliability in India's crypto sphere, having over 5 million registered users with a staggering 2 million active participants, as of January 2023.

This thriving community encompasses a diverse array of individuals, including retail traders, institutional investors, and crypto aficionados. The platform prioritizes accessibility, offering a user-friendly interface, swift transactions, and robust security features to guarantee peace of mind for its patrons. WazirX provides a wealth of trading tools and resources, enabling even novice users to make knowledgeable investment decisions. It is renowned for its commitment to the Indian crypto community and has been a trailblazer in educating and galvanizing the public about the advantages of cryptocurrencies. This advocacy has cultivated a sense of mutual support among WazirX users and established the platform as a reputable source of information in the crypto industry. One of the most sought-after facets of WazirX is its peer-to-peer trading platform, a decentralized exchange that allows for the direct buying and selling of cryptocurrencies without intermediaries. This innovation has facilitated easier and more convenient trades for users and propelled the growth of the WazirX community by providing a rapid, secure, and cost-effective means of trading.

3) Scalability

As WazirX grew, it encountered several scalability issues, including: slow processing of orders, blockchain network congestion, and limited storage capacity.

When the number of users on the platform increased, so did the volume of trades and orders, leading to slow order processing. The blockchain network congestion also caused slower transaction times and higher fees for users. The platform's database, being congested with an increasing number of users and transactions, resulted in slower retrieval times and lower storage capacity. To address these issues, WazirX has taken several measures to ensure scalability. It upgraded its infrastructure with new servers, storage systems and other components, optimized its algorithms and processes, and added more servers to increase capacity and reduce downtime or slowdowns. WazirX also continuously monitors the platform's performance, making improvements as needed to guarantee scalability and a top-notch user experience. In conclusion, scalability is a critical aspect of the success of a cryptocurrency exchange, and WazirX has taken the necessary steps to overcome its scalability challenges. With an upgraded infrastructure, optimized algorithms, added servers and continuous performance monitoring, WazirX is well-positioned to accommodate its growing user base and ensure an optimal user experience.

C. Rarible

1) Features

Services: Buy, mint, sell
Blockchains: Ethereum, Solana, Tezos, Polygon
Wallets: Metamask, Ledger, and Coinbase
Gas fees: 1% buyer and seller
Types of NFTs: Art, photography, gaming, metaverse, and others
Top Collectibles: Bored Ape Yacht Club, Dreadfulz, SewerPass

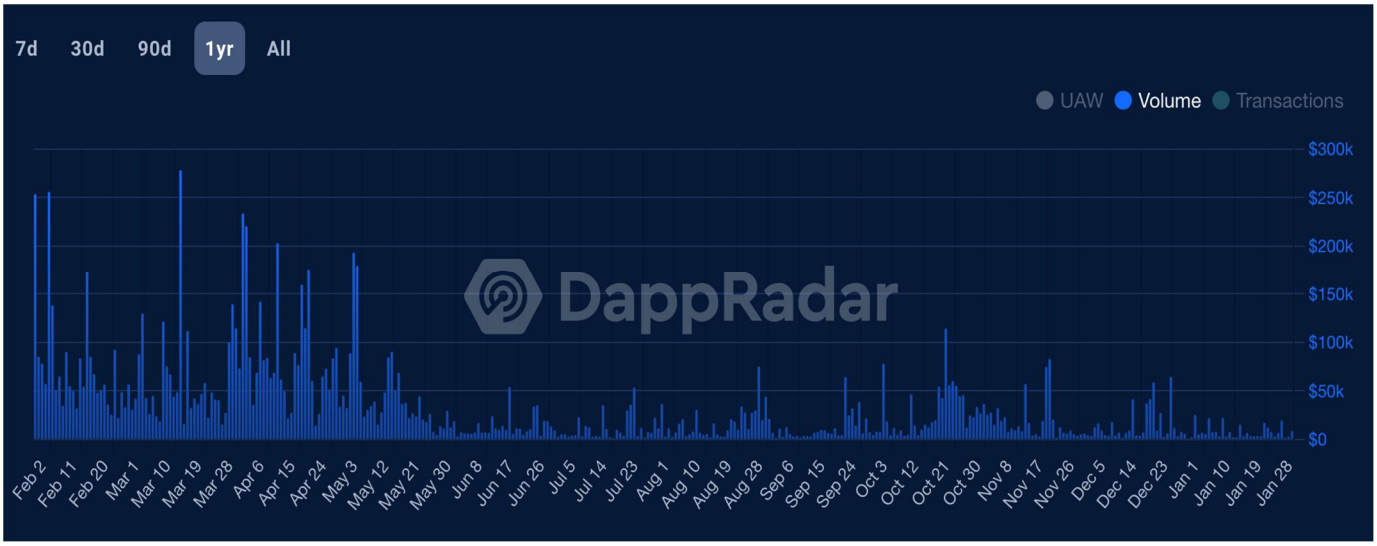

Fig. 9: Rarible trading volume of 1 year[14]

2) Origin and Community

Rarible, a decentralized platform founded in 2017, has taken the digital art world by storm and firmly established itself as one of the largest and most popular marketplaces for NFTs. With over a million unique NFTs listed on its platform and over $100 million in sales facilitated, Rarible has become a hub for creative expression and monetization for artists and creators alike. But, what truly sets Rarible apart from other NFT marketplaces is its governance model. The platform is governed by its users, giving them a voice in important decisions such as platform upgrades and marketplace rule changes. This has cultivated a strong sense of community and ownership among Rarible users and made the platform highly responsive to their needs and desires. In addition, Rarible's NFT auction platform has gained a significant following among collectors and investors, thanks to its ability to facilitate high-value sales. In fact, one NFT sold for a remarkable $500,000 on the platform. With its user-friendly listing and sales management system, vibrant creator community, and innovative features, it's no wonder that Rarible continues to grow in popularity and influence. Overall, Rarible's unique combination in terms of both its technology and its community – has made it a driving force in the NFT and digital art world. The platform's decentralized governance model and thriving NFT auction platform have combined to create a dynamic and exciting ecosystem that is sure to continue shaping the future of the digital art world for years to come.

3) Scalability

Rarible, the thriving NFT marketplace, is grappling with a common adversary faced by blockchain-based platforms - scalability. Despite its widespread popularity and 200,000 monthly active users, the platform is encountering challenges due to its unwavering reliance on the Ethereum network. The rising number of transactions and users are putting immense pressure on the network, leading to slow transaction processing times and exorbitant gas fees. Etherscan data reveals that the average gas fee on the Ethereum network reached an unprecedented level of $22 in May 2021. As a result, Rarible's inability to handle a large volume of users has resulted in sluggish load times, hindrances in transaction processing, and a host of performance issues. To tackle these issues, Rarible has taken proactive steps to enhance its scalability. In a bid to reduce the burden on the Ethereum network and quicken transactions, Rarible has incorporated off-chain transactions. Additionally, the platform has optimized its smart contracts to bring down gas fees and enhance performance. Furthermore, Rarible has upgraded its infrastructure by adding new servers and storage systems, increasing its overall capacity and performance.

D. Binance NFT

1) Features

Services: Buy, mint, sell, bid
Blockchains: Ethereum
Wallets: Metamask, WalletConnect
Gas fees: 1% for buyer and seller
Types of NFTs: Art, photography, gaming, music
Top Collectibles: SYN CITY: Limited Blueprint, STEPN x ASICS NFT Sneaker

Fig. 10: Rarible trading volume of 3 years[15]

2) Origin and Community

Binance NFT was launched in 2021. As of January 2023, Binance NFT has a rapidly growing number of active users, with over 100,000 NFTs listed on the platform. Binance NFT is also known for its strong commitment to the NFT community. The platform has a growing number of partnerships with artists, creators, and other NFT marketplaces, which has helped to bring new and exciting NFTs to the platform. Binance NFT is also committed to educating and engaging the public about the benefits of NFTs, and has actively worked to increase awareness and understanding of NFTs. Another popular feature of Binance NFT is its strong security measures. The platform uses state-of-the-art security protocols to ensure the safety of user funds, and has a robust system for detecting and preventing fraud and scams. This has helped to build trust in the platform, and has made Binance NFT one of the safest and most secure NFT marketplaces. Overall, the community on Binance NFT is thriving, with thousands of active users buying, selling, and trading NFTs every day.

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3) Scalability

As the NFT market booms, the scalability challenges faced by Binance NFT are becoming increasingly pressing. The platform's reliance on the Binance Smart Chain (BSC) is at the forefront of these issues. Despite its increasing popularity, the Binance Smart Chain's limited capacity for transactions per second, peaking at around 100 TPS as of March 2021, presents a formidable obstacle to the seamless minting and purchasing of NFTs on the platform during periods of heightened demand. Moreover, the platform's ability to accommodate a rapidly growing user base also poses a scalability challenge. With an estimated 10,000 monthly active users in March 2021, Binance NFT is grappling with the possibility of slow load times, transaction delays, and overall performance issues as the platform continues to expand. In an effort to overcome these scalability hurdles, Binance NFT has taken a multi-pronged approach. Integrating with the Polygon (formerly Matic) network, for example, is expected to result in faster, more cost-effective transactions than on the Binance Smart Chain. In addition, off-chain solutions such as IPFS are also being explored to increase scalability and reduce the burden on the blockchain network. Moreover, Binance NFT has taken steps to improve its infrastructure to handle larger numbers of users, upgrading its servers and implementing load balancing techniques to ensure that the platform remains responsive and fast even during periods of high demand.

IV. ADVANTAGES

Elixer has several advantages that can enhance the overall user experience and increase the popularity of the NFT market. In this paper, we will explore these advantages and discuss how they can benefit both buyers and sellers in the NFT market.

A. Convenience

The convenience factor is a paramount advantage of having a mobile-based NFT marketplace. The accessibility provided by the mobile platform empowers users to carry out buying and selling transactions at their own leisure and from any location. No longer are they confined to their computer desks and limited by time, rather they possess the flexibility to execute trades anytime, anywhere. With a mobile app NFT marketplace, users stay abreast of the latest NFT trends and listings, and receive instant notifications when their favorite NFTs become available. This keeps them engaged and ready to pounce on purchasing opportunities. Security and reliability should never be a concern for users who opt for a mobile-based NFT marketplace. In fact, mobile apps can offer the same, if not stronger, security features than their web-based counterparts, such as facial recognition or fingerprint authentication.

B. Simplified Transaction Process

The utilization of in-app coins in Elixir promises a bounty of advantages for its users. No longer must they trudge through the tedious steps of opening an account on an external cryptocurrency exchange, purchasing cryptocurrency, and finally transferring it to the NFT marketplace. This streamlines the buying and selling experience, making it more effortless and user-friendly. Furthermore, the implementation of in-app coins reinforces the security of user transactions. Rather than entrusting their cryptocurrency to an external exchange, users can now securely store their in-app coins within the app, reducing the likelihood of hacking or other security breaches that are prevalent with external exchanges. The utilization of in-app coins not only heightens security, but it also enriches the liquidity of the marketplace. With the ability to directly purchase NFTs with in-app coins, the frequency of transactions surges, attracting more buyers and sellers to the NFT market, thereby increasing its popularity and overall value.

C. Better User Experience And Regulatory Compliance

The implementation of a centralized blockchain in Elixer presents a multitude of benefits when it comes to the streamlined processing of transactions. These transactions can be swiftly confirmed, rendering the overall trading experience more efficient for users. However, the true advantage lies in the central authority's ability to detect and mitigate fraudulent activity with ease. The central authority's control over the network enables them to identify and halt any suspicious behavior, thereby enhancing the overall security of the marketplace and reducing the risk of fraud for users. As the network expands and accommodates a growing number of transactions, the central authority can make necessary modifications to the network, ensuring its ability to handle the high volume of transactions without any hiccups. This adaptability is a critical factor in the network's ability to provide a better user experience. By enforcing rules and regulations, the central authority can regulate the cost of transactions and make trading more affordable for users.

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Furthermore, the central authority's ability to monitor and control the network enhances regulatory compliance, ensuring that the app is in compliance with anti-money laundering (AML) and know-your-customer (KYC) regulations. This protection shields the app and its users from any legal consequences. Even Ethereum, known for its decentralized network, is now turning towards centralization for improved efficiency and security.

D. Fixed And Affordable Gas Fees

By implementing low and flat gas fees, the app streamlines the buying and selling process, making it accessible to a wider audience. This not only attracts more users to the platform, but also increases the overall liquidity of the marketplace. With lower transaction costs, the network will facilitate a more efficient exchange of NFTs, leading to more transactions and attracting even more buyers and sellers. Furthermore, a centralized blockchain with in-app coins ensures that the central authority can monitor and control gas fees, making them more predictable and stable.The result being faster transaction processing times, reduced congestion, and a more proficient network that offers fewer delays for users.

E. Security

Elixir offers a safer platform for cryptocurrency enthusiasts, securing them from hacking and phishing attempts that could lead to the loss of their hard-earned assets. When one stores their digital currency on an external exchange, they are at the lenience of the platform's security measures, and if these fail, the results can be catastrophic. By opting to use in-app coins, users can securely store their assets within the Elixer application, offering an extra layer of protection. The app keeps a vigilant eye on the network, constantly monitoring for any signs of suspicious activity and quickly deploying countermeasures to thwart any hacking attempts. Moreover, with a centralized blockchain at its core, Elixer provides a transparent and accountable platform, ensuring that fraud and malicious activities are swiftly detected and prevented, further enhancing the security of user assets.

V. DISADVANTAGES

A. Dependence On The Platform

The possibility of the platform shutting down or experiencing a catastrophic failure raises concerns about the potential loss of value for the in-app coins, leaving users with no means of accessing their assets. This worst-case scenario also brings to light the precarious nature of user data and assets on these platforms. Should technical issues arise, the result could be disastrous - causing user data or assets to be lost and making it nearly impossible for users to recover their financial value. This not only results in significant losses for the users, but it also erodes trust in the platform, leaving them vulnerable to even greater risks in the future.

B. Limited Financial Freedom

The use of in-app coins within a platform may curtail the financial autonomy of its users, unlike more widespread cryptocurrencies such as Bitcoin or Ethereum. These in-app coins, unlike their more ubiquitous counterparts, can only be utilized within the confines of the platform and are not readily transferrable to other ecosystems or marketplaces. The worth of the in-app coins is contingent upon the prosperity of the platform, and any obstacles faced by the platform could lead to a devaluation of the coins and subsequently, a financial loss for its users.

C. Inability To Connect With Other Platforms

The NFT marketplace that incorporates in-app coins and operates on a centralized blockchain infrastructure is faced with a unique challenge: its limited compatibility with other platforms and networks. This lack of interoperability restricts the reach and usability of the marketplace and its users, as NFTs are unable to be freely traded or transferred to other platforms with greater potential for buyers and higher NFT value. The consequence of this hindrance is that the marketplace may miss out on opportunities to participate in NFT trading competitions or initiatives hosted by other networks or marketplaces. The perplexity and burstiness of the NFT marketplace's reach and accessibility are negatively impacted by this lack of connection.

VI. ENVIRONMENTAL AND LEGAL CONCERNS

The concerns surrounding the environmental and legal implications of NFTs have been the subject of heated debate ever since the rise of their popularity in 2021. While NFTs may seem like a promising new technology, their production and circulation are not without consequences, particularly in regards to the environment and the law.

The environmental impact of NFTs is primarily due to the massive amounts of energy required to mint and trade them. Blockchain technology, the backbone of NFTs, depends on a process known as mining, which requires complex mathematical algorithms to validate transactions. This energy-intensive process not only consumes a vast amount of energy but also contributes to the emission of greenhouse gases and the acceleration of climate change.

According to a report published by the Cambridge Center for Alternative Finance in 2021, the global energy consumption for cryptocurrency mining was estimated to range between 61.1 and 74.6 TWh in 2020, making it comparable to the energy consumption of entire countries such as Peru or Ireland. Unfortunately, a significant portion of this energy is derived from non-renewable fossil fuels, compounding the negative effects on the environment.

One of the better known studies on this topic is by artist and programmer, Memo Atken, who analysed some 80,000 transactions related to NFTs on marketplace SuperRare and concluded that a single transaction averaged a footprint of 48kg CO2. To make matters worse, his studies further analysed 18,000 NFTs on the platform CryptoArt and revealed that when it comes to a single NFT—from minting to transactions, ownership and more—the average footprint rose to a whopping 211kg CO2. Putting this into perspective, Atken notes that this is roughly equivalent to the carbon emissions of driving 1000km on petrol or flying an airplane for two hours; and an EU resident's electricity consumption for one month or boiling a kettle 4500 times. [16]

Digiconomist suggests that a single Ethereum transaction generates a carbon footprint of 146.42kg CO2, equivalent to watching 24,403 hours of YouTube, and its power consumption 262.52 kWh, equivalent to that of an average US household over 8.87 days. To again put that into perspective, the number of Ethereum transactions that took place on 27 February 2022 was an astonishing 1.125 million, which is still lower than the 1.716 million in 11 May 2021, following the Beeple sale. [16]

The rise of NFTs has sparked a plethora of concerns beyond just their impact on the environment. Legal issues loom large, with copyright and trademark infringement among the most pressing. The use of NFTs to sell or trade unauthorized copies of artwork, music, videos, and other content exposes traders and platforms to potential legal action. In 2021, a landmark lawsuit brought by a prominent musician against the NFT platform OpenSea, over the sale of pirated music through NFTs, served as a stark reminder of the need for NFT platforms to implement stricter measures to combat intellectual property violations.

Furthermore, NFTs are not immune to criminal misuse. Their ability to facilitate anonymous fund transfers has raised concerns over their potential use in illegal activities such as money laundering and tax evasion. The ease with which NFTs can move assets across borders without detection makes them a formidable tool for tax cheats. In response, the Financial Action Task Force (FATF), a globally recognized organization for anti-money laundering and countering terrorism financing, issued guidelines for regulating NFTs to prevent such illicit practices. The proliferation of NFTs, therefore, highlights the importance of striking a balance between innovation and regulation to protect the integrity of the financial system.

The adoption of sustainable and responsible practices in the creation and circulation of NFTs is a pressing issue that must be addressed to assuage environmental and legal fears. Failure to act in an eco-friendly and responsible manner could lead to negative outcomes for NFTs, the environment, and society as a whole.

The future of NFTs is faced with significant environmental and legal challenges that must be addressed in order to sustain the growth of this innovative technology. As NFTs continue to gain popularity, it's imperative that NFT platforms adopt sustainable and responsible practices to mitigate potential harm to the environment and ensure compliance with legal regulations.

Implementing renewable energy sources for NFT mining, protecting against copyright and trademark infringement, and enforcing anti-money laundering and tax evasion measures are just a few ways that NFT platforms can address these challenges. But, self-regulation through codes of conduct, responsible sourcing policies, and dispute resolution procedures can also play a crucial role in maintaining the integrity of the NFT industry.

Leading the charge towards a more sustainable and responsible future for NFTs is the NFT Standards Association, established in 2022. The Association works to encourage the use of industry standards, best practices, and renewable energy sources in NFT mining, promoting a brighter future for NFTs and the digital economy as a whole.

VII. USE CASES FOR VARIOUS INDUSTRIES

The use of NFTs holds tremendous potential to transform various sectors and introduce innovative revenue streams for businesses and consumers. Take digital art, for instance - NFTs serve as a catalyst, providing a secure platform for authentication and sales of digital artwork, thereby affording artists a fresh source of income and enabling collectors to possess unique, one-of-a-kind pieces. This presents a novel realm of possibilities for artists and collectors alike, making it easier to create, sell, and acquire digital artworks.

In the realm of gaming, NFTs can serve as a symbol of in-game items, such as weapons, armor, or even collectibles. This creates an arena for players to buy, sell, and trade these items, thereby providing gaming companies with new revenue streams and allowing players to own exclusive, rare items in their preferred games.

NFTs can also be used to represent and trade collectibles, such as trading cards, stamps, and coins. This grants collectors with a secure and convenient means to authenticate and trade these items, making it effortless to buy and sell collectibles with confidence. Companies in the collectibles industry also stand to benefit, as they can sell NFTs that represent their products, creating yet another source of income.

In the music industry, artists are now able to sell their works directly to fans as NFTs. This not only generates a new revenue stream but also creates a deeper connection between fans and the music they love. Fans can now own a piece of their favorite artists' creations and form a more personal bond with the music.

Sports fans can now own a piece of their favorite teams and players thanks to NFTs. Items like autographed jerseys, tickets, and trading cards can now be represented and traded as NFTs, creating a new revenue stream for companies in the sports memorabilia industry.

In the digital age, personal identity is becoming increasingly important and NFTs have the potential to have a profound impact in this area. NFTs can represent personal identity, giving individuals control over their personal information such as their name, image, and reputation. This empowers individuals and opens up new opportunities for companies in the identity space.

NFTs hold immense potential to revolutionize several industries, starting with education, where the representation of academic credentials such as degrees, certificates, and accreditations becomes easier, more secure, and accessible. With NFTs, individuals have the power to prove their educational qualifications without any hassle, thereby, providing a new level of transparency in the educational sector.

In the world of charity, NFTs have a crucial role to play as well. These digital assets can be used to represent donations, ensuring accountability and transparency in the charitable sector. Donating to charity has never been more effortless, and organizations now have the capability to keep track of how their donations are being utilized.

E-commerce is yet another industry that NFTs can transform. By representing product ownership, NFTs make it easier for consumers to buy and sell second-hand goods. Companies in the e-commerce sector can also take advantage of this innovation by representing product ownership as NFTs, which can result in a seamless buying and selling experience for consumers.

The fashion industry could be overhauled by the advent of NFTs, which have the potential to offer a novel and invigorating outlet for designers to sell their creations. These NFTs allow for the representation of clothing and accessories, providing consumers with a chance to own one-of-a-kind pieces that imbue a sense of pride and uniqueness. NFTs eliminate the concern of duplicates or counterfeit items as each NFT is irreplicable, thereby elevating the authenticity and elitism of the fashion domain.

In a similar vein, NFTs could bring about a seismic shift in the film and television industry. By leveraging NFTs to monetize rights to movies and TV shows, studios would open up a whole new realm of revenue streams. For fans, NFTs present a rare opportunity to possess a tangible aspect of their beloved films and television programs, fostering an enhanced level of involvement and connection. This, in turn, could lead to increased profits for studios and a wider range of opportunities for fans to immerse themselves in their favorite shows and movies.

The potential benefits of NFTs extend far beyond just the world of art and collectibles. Political campaigns could greatly benefit from their use as well. NFTs could serve as a representation of political endorsements and donations, thereby elevating transparency and accountability in the political arena. With NFTs, candidates could build trust with their supporters, as the technology offers a new level of transparency in the political process. Additionally, NFTs could eliminate the potential for fraud and abuse, safeguarding the political process from these unsavory elements. Another industry that holds immense potential for NFTs is virtual real estate. By functioning as a representation of virtual land, buildings, and structures in virtual reality environments, NFTs make it easier for individuals and businesses to buy, sell, and trade virtual real estate. This creates new opportunities for virtual entrepreneurs and businesses, while providing an exciting and engaging experience for individuals interested in virtual reality.

VIII. FUTURE WORK

As Elixer continues to evolve, there are several avenues for growth and enhancement. Security is an indispensable area of focus, as it's imperative to safeguard the marketplace and transactions from the lurking threats of cybercrime and deceitful activities. By continuously upgrading the defenses against these maladies and equipping the platform with the latest tools, Elixer can fortify its security and provide a secure environment for transactions.

Another critical aspect is scalability, which enables the platform to handle the increasing traffic and volume of transactions with ease. This feature is especially crucial as the marketplace continues to grow and attract more users.

Enhancing the user experience is also an area for improvement. A sophisticated search and filter system can assist buyers in locating the NFTs they desire with ease, while a user reputation and feedback system can foster trust and credibility between buyers and sellers.

Expanding the reach of the marketplace is another goal that Elixer should strive towards. Integrating with popular blockchain games and platforms can bring in a new cohort of users and provide a wider audience for NFTs.

Finally, Elixer can take the user experience to new heights by incorporating innovative ways of showcasing and interacting with NFTs. By integrating virtual and augmented reality, the platform can provide users with a unique and immersive experience that is unparalleled in the world of NFTs.

IX. CONCLUSION

The platform has aimed to distinguish itself by introducing in-app coins, flat and low gas fees, and a centralized blockchain that operates within the confines of the application. A market analysis has shed light on the immense growth and demand potential of the NFT industry.

However, as with any new and rapidly expanding frontier, it is crucial to approach the NFT space with a critical eye. The advantages offered by platforms like Elixer must be weighed against potential security risks, as well as the environmental impact that comes with the creation and exchange of NFTs.

The NFT industry is replete with unique and one-of-a-kind digital assets, which are bought, sold, and traded with increasing frequency. Yet, as we continue to explore the full extent of the industry's potential, we must also acknowledge the responsibility that comes with harnessing this technology. Moving forward, it is imperative that research and development in the NFT arena strive to address these issues and find sustainable solutions.

In conclusion, the NFT industry is brimming with opportunity, but it is crucial to approach this uncharted territory with caution and an eye towards the future. Only then can we fully realize the potential of this exciting and ever-evolving field.

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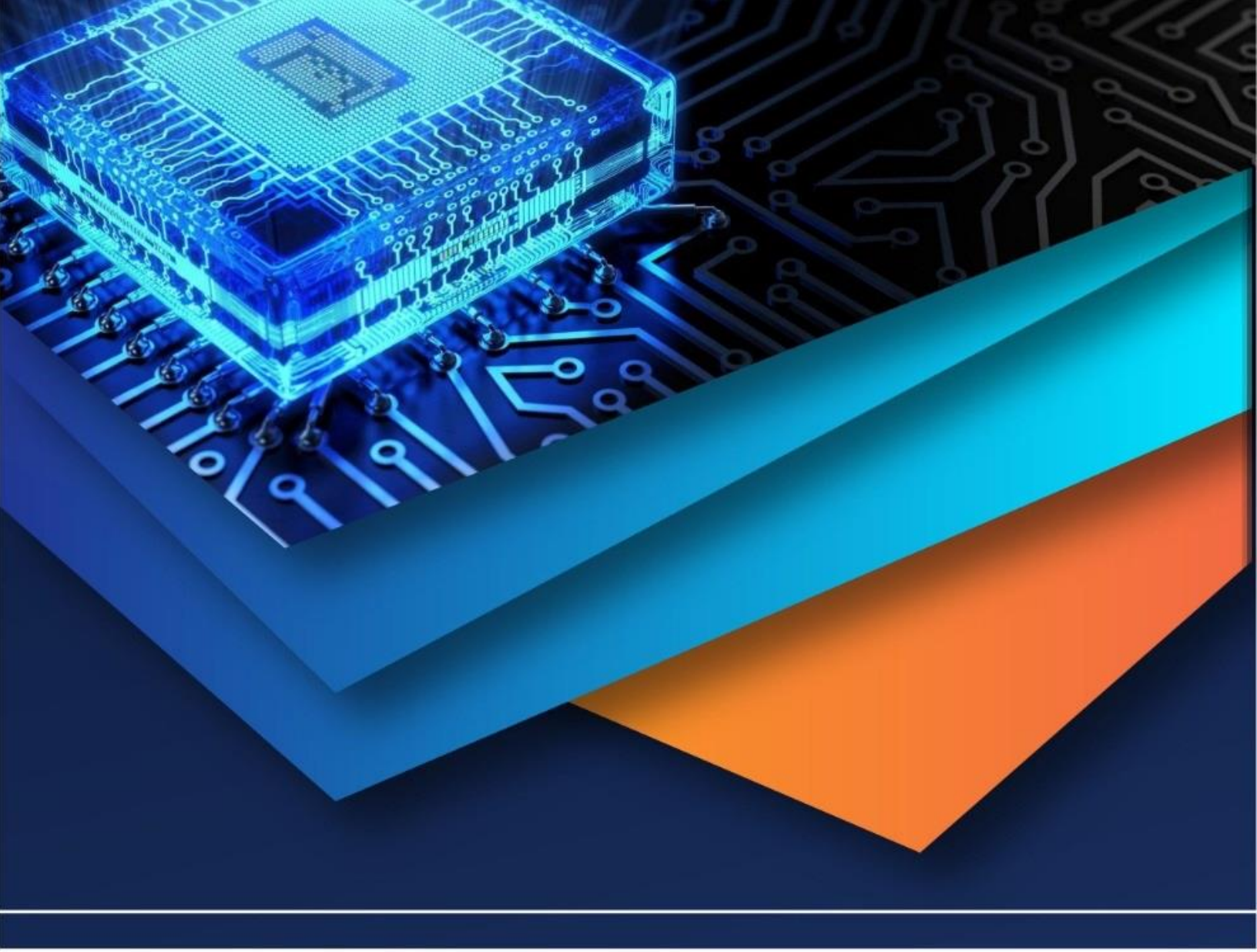

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