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NFT Certificate for Luxury Goods

Harini S,Jothimani C,Mythili Priya S,Riswana B
Department of Information Technology
Sengunthar Engineering College, Tiruchengode, India
Menagadevi R
Assistant Professor, Department of Information Technology
Sengunthar Engineering College (Autonomous),Tiruchengode,India
rmenagadevi.it@scteng.co.in
https://orcid.org/0009-0003-9585-1149

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Abstract: With the growing popularity of online luxury retail platforms, authentication of luxury Luxury goods and institutional trust in online retailers are becoming increasingly important. Due to the inability to physically inspect offerings in person, consumers may have heightened anxiety and reduced trust in luxury Luxury goods and retailers. Therefore, this research explores how a novel retail technology block chain-enabled non-fungible token (NFT) authentication can address this issue. The serial multiple mediation analyses show that NFT authentication significantly enhances purchase intention in both new and pre-loved luxury platforms, mediated by warranting value and structural assurance. Notably, NFT authentication directly increases purchase intention only for pre-loved luxury goods. This study contributes significantly to the body of knowledge on digital transformation in retailing and luxury consumer research. The implications suggest that luxury retailers can strategically leverage blockchain technology to differentiate themselves in a competitive market. It is important to bring transparency about the Luxury goods to the notice of the consumers. The developing presence of fake and risky Luxury goods in the world is a purpose for the situation and blockchain technology has taken the following step toward its entire demolition. This technique is used to watch the supply chain in the market. So In this project, we create a system that delivers the original Luxury goods to the customer and helps to identify if the Luxury goods is fake or real to the customer. This proposed system not only stops the making of fake Luxury goods but also spreads awareness about this. For the creation and packaging of the right items each of these items needs to be provided with a digital code of its own. This research paper proposes a form of identification of fake Luxury goods using blockchain technology. Discusses the software implementation process where the Luxury goods code is scanned using this application and confirms whether the given Luxury goods is fake or not.

Keywords: Blockchain, Non-Fungible Token (NFT), Digital Certificates, Decentralized System, Security, Digital Ownership

1. INTRODUCTION

In the current advancing world of technology, the global development of a Luxury goods or technology always comes with risk factor such as counterfeiting and duplication, which can affect the company name, company revenue, and customer health. The basic idea of the project is to verify that the Luxury goods purchased by the customer is fake or real. In comparison with blockchain we have traditional supply chain. Traditional supply chain provides centralized network where the data is in the hand of the company which provides the service or the Luxury goods in the market, and they own the data so they can manipulate as per their wish so they are not secure. Counterfeiting of the Luxury goods are produced to take advantage of the superior value of the imitated Luxury goods. As mentioned, traditional supply chain provides centralized network whereas Blockchain provides decentralized data base, every transaction involving the data value for the Luxury goods maintain the database. In a distributed ledger system, a block will not be recognized as authentic until it has been validated and sanctioned by a number of distinct entities. Additionally, the data that is included within blocks is immutable, meaning that it cannot be changed in any way. For instance, the utilization of a blockchain to facilitate the execution of smart contracts results in a system that is more reliable due to the fact that it eradicates any concerns regarding the precision of the information.The blockchain technology makes available a database that is both decentralized and incorruptible, and it has the potential to be used for a wide variety of applications. It is a decentralized network that has the potential to have millions of members located in different regions all over the world. Users of the peer-to-peer (P2P) network have the ability to generate records that cannot be altered and to engage in financial transactions with one another.

This technology is also known as the write-once, append-many technology, and the only way it can be updated is once it has obtained the agreement of all of the members that are part of that network. This is the only way it can be updated.

2. LITERATURE REVIEW

The literature review provides an overview of previous studies and research related to blockchain technology, Non-Fungible Tokens (NFTs), and digital asset management. Many researchers have explored the use of blockchain for improving security, transparency, and reliability in digital systems. With the increasing use of digital platforms, protecting digital assets and verifying ownership has become a major concern. Various technologies have been proposed to address these issues, among which blockchain has shown significant potential research studies highlight the advantages of blockchain such as decentralized data storage, cryptographic security, and tamper-proof record keeping. Similarly, NFTs have been introduced as a way to represent unique digital assets and prove ownership through blockchain networks. These technologies have been widely applied in areas such as digital art, online gaming, and digital certification systems.

2.1 BLOCKCHAIN TECHNOLOGY IN DIGITAL ASSET MANAGEMENT

Blockchain technology has gained significant attention for its ability to provide secure, transparent, and decentralized data management. Researchers have explored the use of blockchain for storing digital records in a tamper-proof manner. By using cryptographic hashing and distributed ledgers, blockchain ensures that once data is recorded, it cannot be easily altered. Many studies highlight that blockchain is suitable for applications such as digital asset management, financial transactions, and secure data sharing because of its reliability and transparency.

2.2 NON-FUNGIBLE TOKENS (NFTS) FOR OWNERSHIP VERIFICATION

Non-Fungible Tokens (NFTs) have emerged as an innovative method for representing unique digital assets on a blockchain. Unlike crypto currencies, NFTs cannot be exchanged on a one-to-one basis because each token contains unique metadata. Researchers have discussed the use of NFTs in areas such as digital art, gaming, and digital collectibles. NFTs provide proof of ownership and authenticity, making them a powerful tool for protecting digital assets and preventing duplication.

2.3 SECURITY AND TRANSPARENCY IN BLOCKCHAIN SYSTEMS

Security is one of the most important advantages of blockchain technology. Several studies emphasize that blockchain uses cryptographic techniques and distributed networks to ensure data integrity and security. Because each block is linked to the previous block using hash functions, any attempt to modify the data can be easily detected. This feature makes blockchain highly suitable for applications that require secure data storage and transparent record keeping.

2.4 APPLICATIONS OF BLOCKCHAIN IN DIGITAL CERTIFICATION AND ASSET PROTECTION

Many researchers have explored the use of blockchain for digital certification and asset protection. Blockchain-based systems can store certificates, documents, and ownership records in a decentralized ledger, making verification faster and more reliable. These systems help reduce fraud and ensure that digital records remain authentic. The use of blockchain and NFTs together provides a modern approach to managing digital assets with improved security and traceability.

3. SYSTEM METHODOLOGY

The system follows a structured methodology to create, store, and verify digital assets using blockchain technology. The system begins with the creation of a digital asset by the user. The asset information, including details such as asset name, owner details, and timestamp, is collected and prepared for processing. This information is then converted into a unique digital token known as a Non-Fungible Token (NFT). After the NFT is generated, the system records the asset information into the blockchain. Each record is stored in the form of a block that contains the asset data, hash value, and the hash of the previous block. This structure ensures that the blocks are connected securely, forming a chain of records. Once the block is added to the blockchain, the data becomes immutable, meaning it cannot be modified or deleted.The system allows users to verify the ownership and authenticity of the digital asset through the blockchain ledger. By checking the stored records and unique token information, users can confirm the originality of the asset. This methodology ensures transparency, prevents duplication, and provides a secure platform for managing digital assets using blockchain technology.

3.1 DIGITAL ASSET CREATION

The first step in the system methodology is the creation of a digital asset. Users upload or create digital content such as images, documents, or other digital files. The system collects important information related to the asset, including the asset name, creator details, and time of creation. This information is used to uniquely identify the digital asset within the system.

3.2 NFT GENERATION

After the digital asset is created, the system converts the asset into a Non-Fungible Token (NFT). The NFT contains unique metadata that represents the digital asset and its ownership information. Each NFT is assigned a unique identifier, ensuring that the asset cannot be duplicated or replaced by another token.

3.3 BLOCKCHAIN STORAGE

Once the NFT is generated, the system records the asset information in the blockchain. The data is stored in blocks, and each block contains the asset details, timestamp, hash value, and the hash of the previous block. This creates a secure chain of blocks that protects the data from unauthorized changes.

3.4 OWNERSHIP VERIFICATION

The system provides a verification process that allows users to confirm the ownership and authenticity of digital assets. By checking the blockchain records and NFT information, users can easily verify whether a digital asset is genuine and who the actual owner is.

3.5 SECURE ASSET MANAGEMENT

The blockchain-based structure ensures secure management of digital assets. Since the information stored in the blockchain cannot be modified easily, it prevents data tampering and duplication. This helps maintain transparency and trust in the system.

4. EXISTING SYSTEM

The existing system for Luxury goods verification using blockchain technology involves the use of decentralized applications (dApps) built on top of the Ethereum blockchain. These dApps provide a secure, transparent, and tamper-proof system for verifying the authenticity of Luxury goods. One example of such a dApp is the Blockcerts Wallet, which allows users to store and verify details of the Luxury goods on the blockchain. The Blockcerts system uses the Bitcoin and Ethereum blockchains to store and verify Luxury goods, with each Luxury goods represented as a unique digital asset on the blockchain. To verify a Luxury goods, the verifier enters the Luxury goods ID or hash into the Blockcerts Wallet, which retrieves the relevant data from the blockchain, including the hashed Luxury goods and any other relevant information. The wallet then compares the hashed Luxury goods retrieved from the blockchain with the hashed Luxury goods provided by the verifier, and if the two match, the Luxury goods is considered authentic and valid.In this case, the use of blockchain technology provides a secure and tamper-proof system for verifying the authenticity of Luxury goods, eliminating the need for manual verification processes and reducing the risk of fraud and tampering. The traditional system for Luxury goods identification involves a central authority, With the advent of blockchain technology, there has been a shift towards a decentralized system for Luxury goods identification. In this system, Luxury goods details are stored and verified using blockchain technology, making the process more secure, transparent, and tamper- proof. One of the most prominent examples of a blockchain-based Luxury goods verification system is the Blockcerts project, developed by Learning Machine in collaboration with the MIT Media Lab.

5. PROPOSED SYSTEM

The proposed system aims to develop a secure and efficient platform for managing digital assets using blockchain technology and Non-Fungible Tokens (NFTs). Traditional systems for digital asset management often face issues such as duplication, unauthorized access, and lack of proper ownership verification. To overcome these challenges, the proposedsystem introduces a decentralized approach where digital assets are securely stored and verified using blockchain.In this system, digital assets are converted into NFTs**,** which represent unique ownership of the asset. Each NFTcontains important metadata such as the creator information, asset details, and timestamp. The information is stored in the blockchain ledger, ensuring that the records remain secure, transparent, and tamper-proof.The proposed system focuses on improving digital asset security, ensuring authenticity, and enabling easy verification of ownership. By integrating blockchain technology with NFT generation and management, the system provides a reliable solution for protecting digital content and maintaining transparent ownership records.

5.1INCREASED SECURITY

Blockchain technology provides a secure and tamper-proof way to store and verify Luxury goods. By using cryptographic algorithms and distributed ledger technology, it is difficult for fraudsters to manipulate or falsify Luxury goods.

5.2 DECENTRALIZATION

Blockchain technology operates in a decentralized manner, meaning that there is no central authority controlling the system. This makes it more resilient to hacking or other forms of attack, as there is no single point of failure.

5.3TRANSPARENCY

The use of blockchain technology for Luxury goods verification enables transparency in the verification process. Anyone can view the blockchain and verify the authenticity of Luxury goods, which helps to increase trust in the system.

5.4 EFFICIENCY

The verification process is automated and streamlined when using blockchain technology. This reduces the time and effort required to verify Luxury goods, which can be particularly beneficial for organizations that need to verify a large volume of Luxury goods.

5.5 LOWER COSTS

By using blockchain technology for Luxury goods verification, costs can be reduced compared to traditional methods of verification. This is because blockchain technology eliminates the need for intermediaries and reduces the amount of paperwork involved in the verification process.

5.6 PORTABLE

Blockchain technology enables Luxury goods to be stored and verified globally, meaning that they can be easily accessed and verified from anywhere in the world. This is particularly useful for individuals who have earned qualifications in different countries or who work remotely.

5.7 IMMUNE TO FORGERY

Blockchain technology provides a tamper-proof and immutable record of Luxury goods, which cannot be falsified or manipulated. This helps to eliminate the risk of fraud and ensures the authenticity of Luxury goods.

6.CONCLUSION

In conclusion, the use of blockchain technology for Luxury goods identification/verification has significant potential to streamline the verification process, increase efficiency, and reduce fraud in various industries. The decentralized, tamper-proof nature of blockchain technology ensures that Luxury goods are authentic, secure, and immutable, and can be accessed and verified by anyone at any time, without the need for a central authority.

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Blockchain-based Luxury goods identification systems offer numerous benefits, including increased transparency, trust, and security, while reducing the administrative burden associated with traditional paper-based Luxury goods delivery systems.

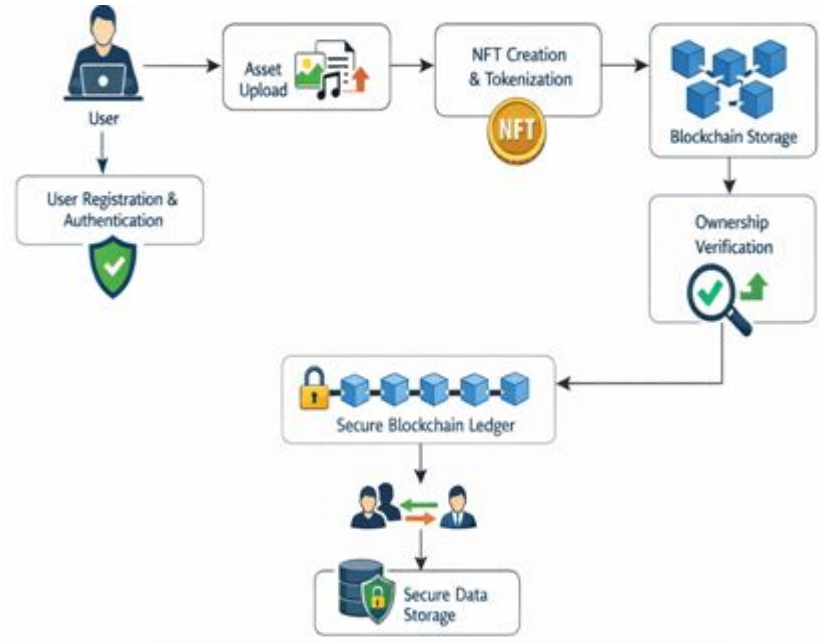

Figure 1. Block Diagram

This technology has the potential to revolutionize the way Luxury goods are manufactured, stored, and verified, ultimately resulting in a more efficient and trustworthy system that can benefit individuals, organizations, and society as a whole.

7. FUTURE WORK

There is significant potential for future work on Luxury goods verification using blockchain technology. One area for future exploration is the integration of blockchain-based Luxury goods verification systems with existing systems and processes to increase interoperability and adoption. As usage of blockchain-based Luxury goods verification systems increases, there may be a need to scale the underlying blockchain network to accommodate higher transaction volumes and improve performance. Improving the user experience of blockchain-based Luxury goods verification systems, such as developing user-friendly interfaces and ensuring compatibility with mobile devices, could increaseadoption and usage. Finally, ensuring compliance with data protection laws, such as GDPR, and developing best practices for data privacy and security, will be critical to the success of blockchain-based Luxury goods verification systems. By addressing these areas of future work, the potential benefits of blockchain technology for Luxury goods verification can be fully realized, resulting in a more efficient and trustworthy system that benefits individuals, organizations, and society as a whole.

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