PROCEEDINGS
OF
LONDON INTERNATINAL CONFERENCES

eISSN 2977-1870

Environmental Contributions of BTCEN Project: Sustainability with Blockchain

Cihan Bulut

Abstract

The BTCEN project has begun to leverage blockchain technology, an innovation to increase efficiency and transparency in supply chain activities, promote recycling, and improve environmental sustainability. BTCEN has integrated Blockchain technology with platforms of e-commerce, tokenization, CRM, and ERP modules into its own systems. In this way, it increased data security while creating an effective tracking system. As a main activity, BTCEN recycles the beverage bottles of product users, increases the participation rate and conversion amount through gamification and some tangible rewards, and uses "Bring Back (BB) Coin" and NFTs as tools. Recycling vending machines strategically placed in different local centers make the process convenient and interesting, while additional incentives such as discounts encourage sustainable behavior. Awareness campaigns in various forms and partnerships with some environmental organizations, educational institutions, and local governments will support BTCEN's successes. BTCEN aims to combine ecological balance and sustainability methods while using technological innovations in its activities. By setting a standard that combines all these, it also encourages the social responsibility culture necessary for a clean environment to be left to future generations.

Keywords: Blockchain Technology, Environmental Sustainability, Supply Chain Transparency, Bring Back (BB) Coin, NFT Incentives.

https://doi.org/10.31039/plic.2024.10.219

Introduction

This study aims to emphasize the different features of the BTCEN project, especially its contributions to environmental sustainability and its sustainability-enhancing aspects, and to reinforce this with the advantages that blockchain technology will provide in the integration of the supply chain sector. The project under consideration, BTCEN, aims to make significant progress in the recycling process of relevant beverage packaging by utilizing blockchain technology, thus promoting environmental awareness and responsible citizen behavior among consumers. Here, we especially want to emphasize the technological innovations and the resulting environmental benefits.

This article will focus on how BTCEN uses blockchain technology to create a more transparent and reliable supply chain system. The rightness of BTCEN in using blockchain technology to integrate e-commerce, tokenization, CRM and ERP modules will be better understood. These technical terms refer to important innovations in the sector. It will be emphasized that thanks to these innovations, positive environmental impacts will accelerate and there will be increases in environmental sensitivity, especially with recycling and sustainability incentives. Of course, the project will have challenges. Solutions to be implemented to overcome these difficulties will be discussed.

1. Technological Overview of BTCEN

1.1. About Blockchain Compatibility

BTCEN leverages the power of blockchain technology to develop and integrate some business-related systems such as Customer Relationship Management (CRM), Enterprise Resource Planning (ERP), E-commerce, and Tokenization.

1.1.1. CRM Systems

Accurate and secure records of customer interactions and customer data are important in CRM systems. Blockchain technology, as the technology behind cryptocurrencies, has unique features such as decentralization, immutability, and cryptography. It reduces the risk of single-point failures and unauthorized access by enabling decentralized management of data (not stored in one place or a central location). With cryptography, advanced encryption techniques are used to ensure that only authorized parties can access and interact with the data. This prevents data tampering, increases data confidentiality, and leads to efficient customer service. By entering the data into the blockchain, the possibility of manipulation or change is prevented, allowing customer data to be recorded securely and transparently (Kumari, Sarkar, & Singh, 2023).

1.1.2. ERP Systems

Enterprise Resource Planning (ERP) system aims for a structure in which all business processes, activities, and functions of an organization are integrated. It consists of a central software consisting of interconnected modules that work together to form an integrated design,

management, and control system. It is an important part of an organization as it manages and facilitates the flow of managerial information within the organization and increases competitiveness. By integrating ERP systems with technology, real-time applications are made possible, business operations can be monitored transparently, and a fully auditable environment can be created (Kitsantas, 2022). Integrating BTCEN Blockchain into ERP systems will gain the mentioned advantages. Real-time data sharing will be provided between departments, operational efficiency will be increased, and the risk of errors will be reduced. Better supply chain management will be created by providing a transparent and reliable tracking system for every stage, from production to recycling.

1.1.3. E-commerce

As it is known, buying and selling goods and services online and carrying out transactions over the internet is known as E-commerce. Transforming transactions and changing the global market, E-commerce has had revolutionary effects on the business world. By using blockchain in the field of e-commerce, a decentralized and tamper-resistant structure will be created, and the security of online transactions will be increased. Automation of transactions and data integrity will be ensured with the help of advanced encryption techniques, real-time transparency, and smart contracts (Kitsantas, 2022). Thus, e-commerce, which creates revolutionary changes in commercial life, will strengthen the security measures surrounding online transactions by providing a more reliable digital market with the effectiveness of blockchain technology. In this way, while possible fraud is reduced, data integrity is ensured and the purchasing process becomes easier.

1.1.4. Tokenization

Expressing sensitive data with a random and unique value is called Tokenization. By creating a token for information such as credit card and citizenship number, this data is prevented from being used openly in any transaction and the security of sensitive data is ensured by using tokens instead. As technological developments continue to shape all economic activities, the environmental impacts of these innovations must also be taken into account. Climate change, resource consumption, and environmental problems have become a global priority. Integrating environmental sustainability at the center of technological development is essential for a sustainable future. With its ability to digitize and manage, blockchain tokenization becomes a tool for effective asset management while reducing environmental impact. With the tokenization system, tangible and intangible assets are represented as digital tokens. These tokens can be easily bought, sold, partially owned, and tracked. In this way, liquidity and transparency will increase in different industries. It will also significantly reduce paper consumption and waste generation by providing a digital alternative to traditional paper-based systems. Thanks to the digitalization of assets, the need for physical transportation and storage will be eliminated, further reducing carbon emissions associated with logistics and infrastructure (Pandl, 2024). BTCEN will convert beverage bottles into digital tokens using blockchain-based tokenization. Thus, tracking and trading of assets will be easier. While tokens are earned through consumers'

recycling efforts, environmental responsibility will be encouraged, while also providing a tangible reward system.

1.2. Some Technical Benefits

Blockchain technology is a network of distributed data that stores data in blocks, connects the data to form a chain, and stores information in digital format. Good traceability of the data shared across this network provides some technical advantages such as increased trust between relevant institutions and organizations, ensuring transaction security, increased transparency, and cost savings thanks to new efficiencies (Budhi, 2022).

1.2.1. Reliability

The immutable nature of blockchain means that data cannot be tampered with due to the hash function, and once recorded, data cannot be changed or deleted. Manipulation of received data is impossible and failure of blockchain technology is almost impossible due to its distributed nature. The reliability provided by this result reduces the risk of fraud and error by ensuring that all stakeholders have access to consistent and reliable information (The Economic Times, 2024).

1.2.2. Security

Blockchain security or the security provided by this technology; is the activation of cyber security practices to reduce possible risks and prevent malicious attacks and unauthorized access while working on relevant blockchain networks. Every transaction on the blockchain is secured by cryptographic principles that ensure data integrity and authentication. BTCEN will ensure the protection of customer transactions, recycling activities, and commercial information with these technological advantages (Chainalysis Team, 2023).

1.2.3. Transparency

Featuring a decentralized ledger system, Blockchain is a digital system that accurately and tamper-proof records transactions between multiple parties. This transparency structure, which ensures that every transaction and data entry is visible to all stakeholders, helps monitor the life cycle of all products, from production to recycling. Thanks to this feature, it becomes easier to verify the originality or origin of the products. This transparent structure will encourage consumers' trust and participation in recycling activities (Gaur & Gaiha, 2020).

1.2.4. Efficiency

Smart contracts existing in Blockchain offer numerous advantages to businesses that want to facilitate process operations and reduce transaction costs. Smart contracts eliminate the need for intermediaries by automating the execution of BTCEN's contractual agreements through code stored on the blockchain. These self-executing contracts with predefined rules reduce the need for intermediaries. Thus, time delays and human errors are reduced, transaction costs are reduced, and transaction processes are accelerated. In this way, the efficiency of the business and the trust between the parties increases.

In short, the use of blockchain technology by BTCEN not only improves its operational capabilities but also contributes significantly to the goal of contributing to environmental sustainability. BTCEN will experience the advantages of using technology to achieve both its commercial goals and environmental goals by making its production-oriented supply chain processes more transparent and reliable.

2. Environmental Benefits

2.1. Transparency in Supply Chains

Blockchain technology, which revolutionizes interactions between borders and stakeholders from companies' suppliers to consumers, is making significant changes in the way supply chains are managed. This issue is of vital importance, especially in promoting environmental sustainability (Naik & Raveendran, 2024). Issues that increase accountability and transparency within the scope of the BTCEN project are attracting attention here.

2.1.1. Effective Tracking

As it is known, businesses in production activities want to monitor and be informed about the movement of the goods and services they are interested in from the starting point to the final destination. The transparency and traceability to be provided in these activities will help solve problems or bottlenecks that may arise in the supply chain process while building trust among the company's customers and stakeholders. Blockchain technology's decentralized and immutable ledger system that records all transactions and activities provides this transparency and traceability. Since all participants in the supply chain have access to the same data, the need for intermediaries is eliminated and the risk of data manipulation is reduced (Spydra, 2023). BTCEN project stakeholders, who will benefit from the advantages of this technology, will have seen and followed the originality and environmental impact of the products they use in the most accurate way.

2.1.2. Accountability of the Parties

The transparency and traceability activities provided by blockchain technology allow companies to monitor the entire production process. This transparency leads to all parties being more responsible in their actions, increasing efficiency, and adopting cleaner production methods. In fact, by automating the compliance of smart contracts within the technology with agreed-upon environmental standards or environmental regulations, companies can be enabled to comply with cleaner production standards. With this understanding of accountability, companies' attitudes toward partners, consumers, and regulators will be more rational, and they will be encouraged to adhere to sustainable activities (Nuryanto, Basrowi, Quraysin, & Pratiwi, 2024).

2.1.3. Consumers' Trust

With the application of blockchain in supply chains, consumers are expected to make more informed decisions as a result of easy access to information about the origin and activity cycle of

products. A transparent environment increases customer trust and encourages consumers to support institutions that prioritize environmental sustainability. It is seen that consumers, especially the Y generation, increasingly prefer brands that embrace sustainability. Some reports reveal that certain product categories with sustainability claims are growing faster than their traditional counterparts (White, Hardisty, & Habib, 2019). In the context of BTCEN, it can be said that consumers will be more likely to participate in recycling programs when they can see their environmental impact.

2.2. Recycling Initiatives

One of the most important components of the BTCEN project is to encourage the recycling of relevant beverage packaging to increase environmental awareness and sustainability. Thanks to recycling, resource use, and environmental damage are reduced. This will allow both current and future generations to live on a healthier planet.

2.2.1. Recycling in Beverage Packaging

There are many reasons to recycle beverage containers. Recycling activities not only keep more money in people's pockets, it also reduces the need for raw materials used for packaging and the energy used to create those packages. This efficiency in resource use helps protect the environment, which is the common property of humanity. In fact, from this perspective, recycled beverage containers are a global product. As an environmentally and sustainability-conscious project, BTCEN has developed a robust system to encourage the recycling of beverage packaging. By integrating blockchain technology, it tracks consumers' recycling efforts and rewards them with tokens that can be exchanged for various benefits. It not only encourages consumers to recycle but also makes the process more interesting and rewarding.

2.2.2. BB Coin Activity

“Bring Back (BB) Coin” is an innovative and beneficial approach to increasing recycling amounts. Customers earn BB (Bring-Back) Coins by recycling their used bottles, which they can later use to get some rewards or participate in environmental games. This gamification based on recycling makes the process fun and also instills a sense of success and responsibility in consumers.

2.2.3. Campaigns to Increase Environmental Awareness

The goals of responsible companies and educational institutions include promoting environmental awareness, developing environmentally responsible behavioral habits, and contributing to the development of socio-economic life by environmental ethics. As a requirement of this responsibility, BTCEN carries out campaigns that emphasize the importance of recycling and responsible consumption and actively promotes environmental awareness through these campaigns. Thanks to these campaigns, people are educated about the environmental impact of waste and the benefits of recycling. BTCEN aims to increase awareness activities to develop a culture of sustainability and collective responsibility.

2.2.4. Cooperation with Different Organizations

It is an important responsibility to take environmental impacts into account in the process of carrying out economic activities. Sustainability is an important issue that should be prioritized. As we move towards a more sustainable future, authorities should recognize the importance of sustainability and strive to leave a greater legacy to future generations while minimizing their environmental impact. As a requirement of this effort, BTCEN cooperates with environmental organizations, educational institutions, and local governments. Thanks to these collaborations, general events, workshops, and training programs emphasizing the importance of recycling and environmental protection will continue to be organized. Thus, will not only encourage recycling but also include large audiences in its sustainability mission.

As a result, the adoption of blockchain for cleaner and environmentally friendly operations is seen as a significant hope for improving environmental performance and promoting sustainability practices. Because with blockchain applications, supply chain efficiency is increased, resource waste is reduced and consumer awareness and accountability are increased (Nuryanto, Basrowi, Quraysin, & Pratiwi, 2024). Today, when integrating blockchain technology into business operations will be important in shaping the environmental reputation of organizations, the BTCEN project has taken an important step. BTCEN's integration of blockchain technology into recycling initiatives will significantly increase transparency and efficiency in supply chain management. BTCEN will make significant contributions to sustainability by encouraging the recycling of beverage packaging and increasing environmental awareness. In doing so, it will serve as a model for how innovative technologies can be leveraged to achieve both commercial success and effective environmental management.

3. Some Innovative Recycling Incentives via NFTs

3.1. NFT and Recycling

NFTs are digital assets created using blockchain technology, and each one is unique. Therefore it is not possible to change it. The term “Non-Fungible Token” refers to the concept of identifying and trading unique digital assets.

Non-fungible tokens (NFTs) have become an exciting technology that provides a new perspective on the ownership, provenance, and exchange of value of assets. NFTs are a Blockchain-based technology. They are cryptographic tokens used to confirm and record ownership of digital and physical assets in an immutable and transparent manner (Razi, Devrani, Abhyankar, & Chalapathi, 2023).

One of the cornerstones of BTCEN's innovative approach to encouraging recycling is Non-Fungible Tokens (NFTs). By integrating NFTs into the recycling process, it has created a dynamic system that not only rewards users for their environmental activities but also offers a new form of gamification and value creation.

3.1.1. Earning NFTs

NFT production is usually carried out on a blockchain platform, especially with a popular cryptocurrency such as Ethereum. Each NFT is a piece of data in a decentralized digital ledger, distinguished by its unique code and accompanying metadata. These tokens are uniquely created on the Ethereum blockchain by a standard called ERC-721 (CRYPTO KID, 2024). In the BTCEN project, users can earn NFT by participating in the recycling process. Every time any user recycles a beverage bottle, they receive a unique NFT token. These tokens are recorded in the existing blockchain, ensuring transparency and security. The rarity and value of NFTs may vary depending on the frequency and amount of recycling customers do. Ultimately, this expectation will encourage users to engage in more recycling activities to collect more valuable tokens.

3.1.2. Buying and Selling NFTs

Today, trading in Non-Fungible Tokens (NFTs) offers creators and collectors a platform to buy and sell unique digital items verified by blockchain technology. NFTs, which represent ownership of different assets, are valuable because of their uniqueness and rarity. There are various NFT marketplaces with different features. Those who trade them need to know the basic steps involved in setting up a digital wallet, purchasing cryptocurrencies compatible with the desired NFT platform, and the process (Walgenbach, 2024). Users who earn NFTs can buy and sell their tokens on the BTCEN platform or other NFT marketplaces. Having an NFT trading system on BTCEN will provide additional excitement and financial incentives to the environmental awareness or recycling process. Customers can sell their NFTs for cryptocurrency or exchange them for other NFTs to complete collections. As a result of these processes, a vibrant market will be created where the value of NFTs can be determined based on demand and rarity.

3.1.3. Possible Effects on Recycling Rates

As previously mentioned, one of the key advantages of NFTs is their capacity to provide a secure and transparent method to verify the legitimacy and ownership of digital assets. NFTs offer new ways for creators to monetize their digital content by selling their unique digital products or licensing their creations while allowing NFT holders to own a unique asset that no other token can replicate. Smart contracts can be used to enable and manage the exchange of NFTs (Nuryanto, Basrowi, Quraysin, & Pratiwi, 2024). The fact that the BTCEN project will offer NFTs as rewards for recycling transactions will have a significant impact on recycling rates. The desire to earn tokens will motivate potential users to participate more actively in recycling programs. Gamification processes, in which users will compete to collect NFTs, will further increase the number of participants. Ultimately, increasing recycling rates will contribute to better environmental sustainability.

3.2. Dynamics That Will Be Effective in the Marketplace

One of the groundbreaking innovative opportunity concepts of the digital age is the NFT market. NFT marketplaces, digital asset ownership, and exchange opportunities offer different advantages and are the source of possible innovations. Therefore, these opportunities will not only encourage

user participation but also strengthen the sense of responsibility in a vibrant community that embraces innovation within the BTCEN ecosystem.

3.2.1. Involvement from Society

Individuals who share a common interest in non-fungible tokens (NFTs) make up the NFT community. Community members focus on the creation, sale, and exchange of NFTs. They often participate in discussions about NFT-related topics, share their knowledge and expertise, and collaborate on projects involving NFTs. They can be found on various online platforms such as Discord, Twitter, Reddit, and Telegram (Brisset, n.d.). On these platforms, they can interact with each other, share tips on earning and trading NFTs, and collaborate to complete collections. This sense of community involvement is critical to maintaining high levels of engagement and enthusiasm for participation in recycling efforts in the BTCEN community.

3.2.2. Developing Environmental Responsibility

The application of blockchain technology is considered a new approach to environmental sustainability and accountability challenges. This innovative approach aims to provide significant environmental and economic benefits by increasing the transparency, traceability, and efficiency of recycling and sustainability management. Unfortunately, tracking and disposal of waste materials in traditional systems is not transparent. Lack of transparency can lead to mismanagement, inefficiency, and even fraud. However, the transparent nature of blockchain technology will ensure that all transactions and recycling efforts are recorded and verifiable (Bułkowska, Zielińska, & Bułkowski, 2023). Increased transparency through the use of the BTCEN blockchain holds users accountable for their actions and encourages responsible behavior. Users within the system actively using NFTs in their recycling and trading will be a source of motivation for other customers. Thus, NFT usage will create a positive feedback loop in continuously engaging in transformation and promoting environmental responsibility.

3.2.3. Promoting Innovations

NFTs are one of the groundbreaking phenomena in our world where creativity and technological development go hand in hand. Their influence in unexplored sectors such as art, games, music, fashion, and sports is getting stronger day by day, and NTF market platforms adapted to different niches are needed. These markets will foster continued innovation in the types and designs of NFTs that can be earned. In this way, limited edition and themed NFTs will be produced through creative collaborations with artists and designers, which will further increase interest in recycling programs and participation in such events(Wilson, 2023).

In summary, BTCEN's use of NFTs to promote recycling is an innovative approach that combines environmental sustainability with cutting-edge technology. In this way, BTCEN will enable users to earn, trade, and collect NFTs. As a result, recycling rates will increase while also encouraging dynamic community participation and environmental responsibility. This innovative system in the industry will serve as an exemplary model for how blockchain technology and digital assets can be leveraged to promote positive environmental change.

4. Improving Recycling through the Use of Technology

4.1. Using Vending Machines

BTCEN will deploy special vending machines at some important points to deliver its products to consumers. In the selection of these points, some strategic issues such as transportation facilities, customer density, and ease of service delivery will be taken into consideration to target the access and comfort of the users. Thus, an innovative approach that facilitates recycling will be implemented by deploying the relevant vending machines most appropriately (BTCEN, n.d.).

4.1.1. User Experiences

Users will be able to purchase drinks from BTCEN's vending machines at any point they wish with the tokens they have. They will be able to mine with the algorithmic codes hidden under the covers of the energy drinks they buy. BTCEN and ALT currencies will be used as currency in these vending machines. It will also be possible to purchase BTCEN and ALT currencies. Customers will be able to establish a safe, fast, and reliable shopping experience that is fully integrated with the infrastructure. The machines will provide instant feedback to the user through a digital interface showing the number of bottles to be recycled and the rewards earned from this process. This real-time interaction will not only simplify the recycling process but also become more engaging for users and will encourage them to recycle more often(BTCEN, n.d.).

4.1.2. Blockchain Integration

As with every new technology, Blockchain technology is also being tested with new projects, and the system is improved by closing existing gaps. Using blockchain technology in the waste recycling process; facilitates traceability, ensures the recording of waste data and prevents data loss, prevents manipulation of the resulting data, and eliminates the need for intermediary institutions. Every recycling action for energy drink bottles will be recorded on the blockchain, ensuring that the data is immutable and transparent. In this way, recycling activities will be monitored accurately, contributing to the overall data integrity and reliability of the BTCEN system. Users can view past recycling activities and rewards through a connected app or online platform. Thus, the process becomes seamless and integrated.

4.2. Incentives for Recycling Activities

To further encourage recycling efforts, BTCEN aims to offer some additional incentives to increase the frequency and commitment of recycling behaviors.

4.2.1. Token Rewards to be Earned

It is stated that BTCEN's tokens will be used to provide liquidity, encourage its investors, community, team, market its products, and stake rewards. Collectors and investors are allowed to lend and earn returns on BTCEN tokens. They can earn BTCEN token rewards by staking BTCEN tokens. Users will also earn BB Coins for every bottle they recycle. These earned tokens can be accumulated or used for various rewards such as discounts on product and service purchases and participation in environmental games. Gamification provided through recycling

will make the act of recycling more rewarding as it will provide immediate and tangible benefits to users(BTCEN, n.d.).

4.2.1. Discounts, Promotions, and Some Special Offers

BTCEN will not only offer token rewards but will also offer direct incentives such as discounts on future purchases. An example would be if users who frequently use recycling vending machines could receive discount codes for BTCEN energy drinks or other partner products. This practice will not only encourage recycling but also encourage brand loyalty and repeat interaction. Meanwhile, BTCEN will periodically roll out special offers and promotions to maintain a high level of user engagement. These may include giving limited-time bonuses for recycling a certain number of bottles, providing special NFT discounts for active recyclers, and granting access to special events and community events. Such efforts can make the recycling process dynamic and exciting for users.

4.2.3. Community Recognition

Among other social responsibility activities, BTCEN will also recognize and reward the best recyclers, and encourage relevant community participation. For this purpose, applications will be made for special awards for public recognition or outstanding contributions to recycling efforts. Recognizing users for their environmental contributions will help build a strong community spirit and encourage others to participate.

It is understood that the strategic placement of recycling vending machines, offering a wide range of incentives, promoting environmental sustainability, and using technology for this are important activities of BTCEN. By making recycling accessible, interesting, and rewarding, BTCEN will not only increase recycling amounts but also promote a culture of environmental responsibility. While doing these, the integration of Blockchain technology will provide transparency and trust in the system. The aforementioned use of gamification and incentives will encourage continuous user interaction. BTCEN will serve as a model for how companies can use technology to solve environmental problems. BTCEN will pave the way for a more sustainable future by making recycling an integral and rewarding part of daily life.

5. Promoting Environmental Awareness

5.1. Awareness campaigns

Environmental awareness needs to be developed to be aware of the natural environment and make choices that will benefit the world instead of harming it. For this purpose, BTCEN's environmental awareness campaigns, sustainability approach, and promotion of responsible behavior culture are of great importance. These activities are designed to educate the community about the importance of recycling and the impacts of environmental protection (BTCEN, n.d.).

5.1.1. Goals of Planned Campaigns

As it is known, thanks to recycling, the need to extract, refine, and process raw materials that cause air and water pollution is reduced. In addition, since recycling saves energy, harmful effects such as greenhouse gas emissions will decrease and contribute to the fight against climate change. The main purpose of BTCEN campaigns is to raise awareness in society about environmental problems and the importance of recycling. It aims to inform the public about how individual actions, such as recycling product bottles, can contribute to larger environmental goals such as reducing waste and protecting natural resources.

5.1.2. Strategies to Follow and Tools to Use

To reach large audiences, BTCEN will use various strategies. Some of these activities include social media campaigns, educational videos, community workshops, and public service announcements. Using engaging and accessible content will help attract the attention of different demographic groups and encourage widespread participation.

5.1.3. Impact of Considered Campaigns

These campaigns, which constantly emphasize the social and environmental benefits of targeted recycling, will help establish a sense of responsibility and unity in society and develop recycling habits. By highlighting the tangible benefits of recycling, such as reducing waste and carbon footprint, it will also provide educational opportunities by raising awareness among community members about the importance of recycling and sustainable practices.

5.2. Receiving Social and Institutional Support

Ensuring participation at the organizational level will positively impact the environment and inspire others to follow the same path. With these expectations, BTCEN wants to cooperate with various environmental organizations, educational institutions, and local governments to increase the reach and effectiveness of awareness campaigns. Through these partnerships, it will play an important role in supporting environmental sustainability on a broader scale.

5.2.1. Collaboration with Environmental Organizations

Companies can benefit from collective expertise, resources, and influence by collaborating with organizations that align with their sustainability goals and values. BTCEN's development of partnerships with environmental organizations and some non-governmental organizations (NGOs) will expand its existing networks, strengthen its environmental advocacy, and establish its expertise. Through these institutions, BTCEN will be able to present its campaign messages more accurately and more effectively. It can significantly increase public participation in environmental activities and sustainable living efforts.

5.2.2. Partnership with Educational Institutions

The critical role of education in promoting sustainability is very important and obvious. In many educational institutions, there are efforts to instill in students conservation values and appreciation of natural resources. Environmental education is a process that allows individuals to

discover environmental problems and take conscious action to improve the environment. Accordingly, schools, colleges, and universities are vital partners in promoting environmental awareness among younger generations. BTCEN will work with educational institutions to integrate recycling and sustainability issues into their curricula. Again, participating in workshops, seminars, and practical activities held in schools, can help students understand the importance of environmental responsibility from an early age.

5.2.3. Support of Local Governments

The role of local governments comes to the fore in the successful implementation and scalability of public awareness campaigns. Because local governments have a one-to-one relationship with the citizens and can receive their demands directly and offer solutions directly. Waste is collected as a result of various studies with the authority, responsibility, and power of local governments that can establish direct relations with citizens. In the work of BTCEN, relevant municipalities can assist in providing infrastructure support such as placing recycling vending machines in public areas and creating appropriate waste management systems. They can also help promote campaigns through official channels and public events, reaching a wider audience. Such policies and regulations that support recycling initiatives can further strengthen the efforts of BTCEN and its partners.

Promoting environmental awareness through targeted campaigns and strategic partnerships are an important part of BTCEN's sustainability efforts. Thanks to these activities, a supportive environment will be created for educating the public, encouraging community participation and ultimately behavioral changes. Collaborations with environmental organizations, educational institutions, and local governments will ensure that the sustainability message is widespread and consistent and reaches different segments of society. These efforts will not only increase the effectiveness of BTCEN's transformation initiatives but will also contribute to a broader cultural shift towards environmental responsibility. As citizens see and become aware of the results of their actions, they will more easily adopt sustainable practices that will be beneficial to the environment in the long term.

Conclusion

The BTCEN project, which strives to combine innovations in technology with environmental sustainability, shows that blockchain can be used to support more successful recycling processes in responsibility and efficiency. Connecting blockchain to platforms like e-commerce, tokenization, CRM, and ERP modules, will improve transparency, reliability, and supply chain management and play an important role in protecting the environment.

BTCEN's innovative approach to integrating blockchain technology with environmental initiatives will create a reference point for how modern technologies can be leveraged in both commercial and environmental management successes. BTCEN emphasizes making recycling activities an integral and rewarding part of daily life and shows that technological developments and environmental sustainability will move together and that a more sustainable future will be

possible when these occur together. Through its successful strategies, BTCEN will both contribute to the protection of natural resources and inspire a global movement towards more sustainable and responsible living.

References

Brisset, C. (n.d.). The complete guide on how to build an NFT community. ICUC Social. Retrieved from https://icuc.social/resources/blog/how-to-build-an-nft-community/

BTCEN. (n.d.). *BTCen whitepaper*. Retrieved from https://btcen.gitbook.io/btcen-whitepaper

Budhi, V. (2022, October 20). Advantages and disadvantages of blockchain technology. Forbes Technology Council. Retrieved from https://www.forbes.com/sites/forbestechcouncil/2022/10/20/advantages-and-disadvantages-of-blockchain-technology/?sh=174e62dd3453

Bułkowska, K., Zielińska, M., & Bułkowski, M. (2023). Implementation of blockchain technology in waste management. Energies, 16, (23), 7742. https://doi.org/10.3390/en16237742

CRYPTO KID. (2024, May 16). NFTs explained: What are they and how do they work? Crypto Kid. Retrieved from https://cryptokid.com/blog/nfts-explained-what-are-they-and-how-do-they-work/

Gaur, V., & Gaiha, A. (2020). Building a transparent supply chain: Blockchain can enhance trust, efficiency, and speed. Harvard Business Review, 98(3), 94-103. Retrieved from https://hbr.org/2020/05/building-a-transparent-supply-chain

Kitsantas, T. (2022). Exploring blockchain technology and enterprise resource planning system: Business and technical aspects, current problems, and future perspectives. Sustainability, 14, (13), 7633. https://doi.org/10.3390/su14137633

Kumari, S., Sarkar, B., & Singh, G. (2023). Blockchain-based CRM solutions: Securing customer data in the digital transformation era. International Journal of Computer Trends and Technology, 71(4), 27-36. https://doi.org/10.14445/22312803/IJCTT-V71I4P105

Naik, B. M., & Raveendran, A. (2024). Blockchain technology: Transforming supply chains and beyond for a new era of transparency and efficiency. Biotica Research Today, 6, (3), 77-80. Retrieved from https://www.researchgate.net/publication/379308811_Blockchain_Technology_Transforming_Supply_Chains_and_Beyond_for_a_New_Era_of_Transparency_and_Efficiency

Nuryanto, U. W., Basrowi, Quraysin, I., & Pratiwi, I. (2024). Environmental management control system, blockchain adoption, cleaner production, and product efficiency on environmental reputation and performance: Empirical evidence from Indonesia. Sustainable Futures, 7, 100190. https://doi.org/10.1016/j.sftr.2024.100190

Pandl, Z. (2024). Public blockchains and the tokenization revolution. Grayscale. Retrieved from https://www.grayscale.com/research/reports/public-blockchains-and-the-tokenization-revolution#:~:text=Tokenization%20reference%20to%20the%20 registration,to%20 interact%20with%20 smart%20 contracts

Razi, Q., Devrani, A., Abhyankar, H., & Chalapathi, G. S. (2023). Non-fungible tokens (NFTs): Survey of current applications, evolution, and future directions. IEEE Open Journal of the Communications Society, PP(99), 1-1. https://doi.org/10.1109/OJCOMS.2023.3343926

Spydra. (2023, October 18). Unveiling the power of blockchain: Enhancing transparency and traceability in supply chains. Medium. Retrieved from https://medium.com/@spydra/unveiling-the-power-of-blockchain-enhancing-transparency-and-traceability-in-supply-chains-b4452f687ed0

The Economic Times. (2024, May 24). Blockchain. The Economic Times. Retrieved from https://economictimes.indiatimes.com/definition/block-chain

White, K., Hardisty, D. J., & Habib, R. (2019). The elusive green consumer: People say they want sustainable products, but they don't tend to buy them. Here's how to change that. Harvard Business Review, 97(4), 124-133. Retrieved from https://hbr.org/2019/07/the-elusive-green-consumer

Wilson, A. (2023, June 8). The rise of NFTs and the need for NFT marketplace platforms in different niches. ILLUMINATION. Retrieved from https://medium.com/illumination/nft-marketplace-platforms-on-different-niche-842fbf0ad124