Blockchain Technology as a Driver of Decentralized Marketing: A Conceptual Analysis and Global Application Models

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Abstract:

This paper aims to explore the role of Blockchain technology in reshaping the digital marketing system by moving toward decentralized models built on transparency, trust, and the protection of customers' data. The study shows that Blockchain technology has strong transformative potential in the digital marketing environment, as it helps reduce intermediaries, improves the credibility of digital advertising, and limits advertising fraud whose losses are estimated at more than 68 billion per year worldwide. It also allows through smart contracts the automation of marketing relationships, the reduction of costs, and the improvement of advertising campaign efficiently. However, the large scale adoption of this technology is still limited by technical, regulatory, and behavioral challenges, which call for multiple and integrated strategies.

Keywords: Blockchain, decentralized marketing, digital transformation.

JEL Classification Codes: M31 , O33.

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Introduction:

The digital business environment during the second decade of the third millennium, witnessed fundamental and unprecedented changes driven by successive waves of technological innovation that reshaped the nature of interaction between institutions and consumers. At the center of these changes, Blockchain technology emerged as one of the most prominent emerging technologies that attracted both academic and practical interest, especially in the context of its marketing applications. It is, in its simplest form, defined as ‘’a distributed and decentralized database that relies on chain of blocks linked cryptographically to record and verify transactions in a way that cannot be tempered with or modified’’ (Nakamoto, 2008 ; p6). It has gone beyond the limits of the financial and business sector to reach all areas of the digital economy, including digital advertising, customer relationship management, e-commerce, and product Supply chains.

In contrast, traditional digital marketing suffers from a set of structural problems that have come to hinder its efficiency and weaken the trust of its parties. Click fraud, the lack of transparency in advertising supply chains, and the excessive control over consumer data by intermediaries are all issues that make it necessary to rethink the structure of the entire digital marketing system (association of national advertisers (association of national advertisers (ANA), 2023).

Global reports have shown that losses from advertising fraud exceeded 68 billion worldwide in 2022, and that around 36% of digital advertising traffic is considered non-real. Here, decentralized marketing appears as an alternative model based on peer-to-peer (P2P) networks and smart contracts, aiming to redistribute power among the actors of the marketing process, given consumers greater control over their data, and establishing trust based on code rather than on a human intermediary.

Research problem:

This study is based on the following central problem:

- How can Blockchain technology be a cause for the shift toward a decentralized marketing model that is more transparent, efficient, and fair?

1. Objectives of the study:

This research paper aims at a set of objectives which are presented as follows:

- Clarifying the main features of Blockchain technology and decentralized marketing in contemporary academic literature.
- Analyzing the technical mechanisms used by Blockchain to reshape marketing processes.
- Attempting to identify the extent of the impact of Blockchain technology in the field of digital marketing.
- Evaluating the opportunities and challenges faced by institutions in adopting this technology in order to move toward decentralized marketing.

2. Significance of the study:

This study comes at a time when the word is witnessing major changes in the digital economy due to the growing concern with data protection, the regulation of its use, and the introduction of new laws that limit the control of large companies, and gives users and states a greater role in controlling their data. The study derives its importance from the fact that it links an emerging technology with a modern marketing model, which helps institutions understand future shifts in managing their relationship with their customers.

3. Methodology of the study:

The study relied on the descriptive approach to describe the reality and prospects of applying Blockchain technology in digital marketing. This is done through presenting the different dimensions of the technology, its development from one generation to another, its mechanisms of operation, as well as its uses in the field of digital marketing. The analytical approach was also used to highlight the role of Blockchain technology in the move toward decentralized marketing and its importance, and finally, to analyze some global application models within the same context.

4. Structure of the study:

The research paper was divided into three main sections as follows:

- The conceptual framework of Blockchain technology and its marketing orientations,
- The role of Blockchain technology in reshaping digital marketing.
- The shift toward decentralized marketing.
- The implications of Blockchain technology on marketing practices: global application models.

Firstly. The conceptual framework of Blockchain technology and its marketing orientations

Blockchain technology has received unprecedented attention in recent years. Initially, it emerged as a digital currency system (Bitcoin) designed to manage financial transactions, before later evolving in a broader way. Satoshi Nakamoto (2008) laid the technical foundation for the first practical application of Blockchain technology through his well-known paper on Bitcoin (Nakamoto, 2008, p8). Since then, the technology has developed quickly, extending far beyond cryptocurrencies to areas such as property records, supply chains, digital identity, and even digital marketing applications.

1. Definition of Blockchain technology:

It is quite difficult to find a single, unified, and widely agreed definition of Blockchain technology, although most researchers agree in their works that Blockchain is highly significant. It emerged as a result of the major development in information and communication technologies and as an inevitable response to the fourth industrial revolution, enabling tasks and transactions to be carried out at the highest possible speed and the lowest possible cost (Afaf, 2023, P 14).

Blockchain or (distributed ledger technology) is defined as ‘’an encrypted information system based on decentralized database, distributed across all devices connected to the network, used to record all transaction data and modify it in a way that ensures the agreement of all relevant parties on the validity of the data’’ (Djenadi, 2023, P568). It is also defined as ‘’a technology that combines several computer technologies, including distributed data storage, peer-to-peer transmission, consensus mechanisms, and cryptographic algorithms’’ (Guo & Liang, 2016, p1).

It should be noted that Blockchain technology ensures data integrity rather than data quality, especially since data cannot be modified retroactively. Therefore, high standards of data quality are required when applying this technology, and this is considered a challenge in itself. It is also necessary to distinguish between Blockchain and Bitcoin, and not to treat them as two sides of the same coin, as some tend to do. In fact, they are different although their emergence was simultaneous and occurred in the same period (Troubia, 2020, P42). Blockchain allows the storage of Bitcoin transactions and has other uses as well, while Bitcoin is only the first application of Blockchain. Blockchain

goes beyond transactions, enabling users to create more advanced smart contracts.

2. Blockchain development: from the first generation to the third generation

The development of Blockchain technology can be traced through three successive generations, according to the dominant academic classification in the literature, as shown in the following table:

Table N°01: The evolution of Blockchain generations and their characteristics

Criterion	Blockchain 1.0 (Currency)	Blockchain 2.0 (Contracts)	Blockchain 3.0 (Justice Applications)
Definition	Use of cryptocurrencies in digital cash payment .applications	Full range of economic and financial applications that go beyond simple monetary .transactions	Applications of Blockchain outside the scope of currency, finance, and financial .markets
Application fields	Currency exchange, international transfers, digital payment systems, field of .application	Stocks, bonds, future contracts, loans, mortgages, real estate, smart property, smart .contracts	Government, health, science, education, culture .and art
Relation to intermediaries	Removal of traditional financial intermediaries (banks, payment .(networks	Removal of intermediaries in markets and contractual transactions	Removal of institutional intermediaries in governance and .social services
Application models	Bitcoin as the first decentralized digital electronic payment system	Ethereum as a complete virtual machine enable the execution of smart .contracts	Namecoin as a decentralized DNS system resistant to censorship; digital intellectual property authentication .services

Source: Prepared by the researcher based on (Swan, 2015, pp. 1-9, 27-29).

It is evident from the previous table that Blockchain technology has developed through three main generations:

1.1 The first generation (1.0): This represents the initial stage of the technology. It focused mainly on cryptocurrencies, and the proof of work mechanism with relatively limited transaction speed and scalability.

1.2 The second generation (2.0): This stage marked a clear shift with the emergence of smart contracts and decentralized applications. It was introduced by Vitalik Buterin in (2013) through the Ethereum platform (Buterin, 2013, p5). These smart contracts made it possible to automatically execute commercials and marketing agreements without intermediaries. This in turn, opened new possibilities in digital marketing, including reward systems and performance-based advertising models.

1.3 The third generation (3.0): This generation shifted attention towards scalability issues and energy efficiency. The main goal here is to support enterprise-level applications and to extend the use of Blockchain across different sectors in a more practical and widespread way.

2. Components of Blockchain and how it works:

Blockchain can be seen as an integrated system built on a set of basic components that allow it to function in a secure and efficient way (Arnold, Tobias, Jan , & Nils , 2026), they are as follows :

3.1. Block: It is the basic storage unit. It contains a set of verified transactions. It also includes a header that carries the cryptographic hash of the previous block responsible for creating the linked chain structure.

3.2. Decentralized network (P2P network): This refers to a group of computing nodes distributed across different locations. Each of which, keeps a copy of the ledger and participates in the verification of transactions.

3.3. Consensus mechanism: It is the protocol which ensures that the nodes agree on one shared version of the ledger. Among the most common types are: proof of work, proof of stake, and delegated proof of stake.

3.4. Cryptographic hash: This is a mathematical function that converts any amount of data into a fixed-length string of letters and numbers so that any change in the data can be detected immediately.

3.5. Smart contracts: These are programs that execute automatically once predefined conditions are met. They are recorded on the Blockchain which ensures their transparency and reliability.

3.6. Public and private keys: These are two cryptographic keys that represent the user's identity. They ensure the security of transactions without revealing the real identity.

As for how Blockchain technology works, the first stage involves carrying out a transaction between client (A) and client (B), for example, the sale of crypto assets. In the second stage, the transaction is recorded together with other transactions in a block. Then comes the third stage, where the block is verified by network participants using cryptography and solving algorithms. In the fourth stage, the validated block is added to the chain of blocks, also referred to as the decentralized ledger. Finally, in the fifth stage, clients (A) and (B) are informed that the transaction has been successfully completed (Arab Monetary Fund, 2019, P9). The main idea behind this technology is that the management and recording of transactions are carried out by the participants who actually use the system. This means that each transaction is stored across thousands of devices worldwide, which makes the system more secure, as it becomes very difficult to tamper with the transactions.

3. Characteristics and advantages of Blockchain:

Blockchain technology is considered as one of the most prominent digital innovations that has brought a significant change in the way data is managed and exchanged. This is mainly due to a set of core characteristics that distinguish it from traditional database systems (IBM Institute for Business Value ،2023):

4.1. Decentralization: Blockchain operates without the need for a central authority controlling the data. Unlike traditional systems, it does not rely on a trusted third party to manage operations. This decentralization helps reduce the risks of monopoly and manipulation, and at the same time, increases user independence and their trust in the system.

4.2. Immutability: Another important feature of Blockchain is that once the data is confirmed and added to the chain, it cannot be changed or deleted. This gives a certain stability to the records and helps preserve the data over time. By contrast, in traditional databases, administrators can still modify or remove data. This latter sometimes leaves space for mistakes or even manipulation.

3.4. Transparency: In Blockchain networks, transactions can be seen by participants, depending on whether the network is public or private. This makes operations more visible and reduces ambiguity. In more traditional systems, access to data is usually limited and controlled through specific permissions.

3.5. Security: Blockchain is considered highly secure, mainly because it uses advanced cryptographic techniques. This makes attempts of hacking or tampering very hard to achieve in practice. Traditional databases, however, usually depend on firewalls and access control systems, and these systems can still in some cases be vulnerable.

3.6. Continuous availability: One important point is that there is no single central point whose failure can stop the system. Instead, the data is distributed across many nodes. This means that if part of the network goes offline, the system as a whole continues to function.

3.7. Full auditability: Blockchain also allows transactions to be traced from the moment they are created in a very transparent way. This makes the auditing processes simpler and generally improves accountability.

Based on the above, it can be said that these characteristics taken together, make Blockchain an advanced and reliable system for data management. It combines security, transparency and independence. This allows it to serve as a good alternative to traditional systems and many fields, especially in environments that require a high level of trust and credibility in digital transactions. These features also reflect the shift toward more open and sufficient digital models, which further supports the adoption of this technology in financial and service sectors and others, and opens new opportunities for innovation in information management.

4. The importance of using Blockchain in digital marketing:

Blockchain technology has the potential to increase the efficiency of digital marketing by providing more transparent and secure ways of storing and transmitting data. It also allows marketers to offer more personalized customer experiences. This can be explained as follows (Remdani, 2025, P593-594) :

4.4. Transparency: Blockchain provides a permanent record of transactions. This makes it easier for marketers to track data, and have a better understanding of the customers they are targeting.

4.5. Authentication: Thanks to Blockchain technology, marketers can verify the legitimacy of transactions and ensure that the data they collect is authentic.

4.6. Privacy: Blockchain can contribute to better data privacy, mainly because it gives users more control over who actually accesses their information.

4.7. Personalization: It can also be used by marketers to create more personalized experiences for customers, especially when combining data from different sources. However, this depends on how the system is designed.

4.8. Faster transactions: Another point is that transactions on Blockchain networks tend to be faster than they actually are in traditional systems. This can help marketers process payments more quickly and deliver services are products with less delay.

5. Risks and challenges of using Blockchain:

Although this new technology represents an important addition, some of its applications still raise a number of challenges and risks. This makes it necessary for all relevant parties, especially regulatory and supervisory authorities, to be properly prepared for it. Among these challenges and risks, the following can be mentioned (Arab Monetary Fund, 2019, P17):

- Regulatory and supervisory bodies face difficulties in keeping up with the rapid growth of Blockchain technologies. This places additional pressure on their staff, and requires the updating of existing systems and regulations.
- Another limitation is the lack of a comprehensive legal framework, and clear protection mechanisms for users of financial services, especially in cases of cyber crime or other system failures.
- The use of Blockchain technology also makes it difficult to determine the exact location of financial assets, since transactions are not stored within a specific financial institution.
- Risks of money laundering increase when Blockchain applications rely on anonymity or the lack of user identification.
- The risk of cyber attacks remains present, despite the security provided by Blockchain in storing and exchanging data.
- The use of Blockchain technology in issuing and exchanging digital or crypto currencies without clear regulatory controls may pose a threat to financial stability, and to the effectiveness of monetary policy implemented by central banks.

Secondly: The role of Blockchain in reshaping digital marketing: The shift toward the centralized marketing

The traditional digital marketing environment has been characterized by the dominance of models that rely on centralized intermediaries such as large data platforms and digital advertising networks. This has led to set up issues within the structure of digital marketing, most notably the lack of clarity in advertising and supply chains, the spread of advertising fraud, and an imbalance in the control over consumers' personal data. The emergence of Blockchain technology has provided a suitable technical framework to confront these problems on several levels. It is a technology that embodies the protocol allowing transactions to be recorded and tracked in a secure and synchronized way without the need for a central intermediary, which creates a major shift in the overall structure of digital marketing (Tapscott, 2016). In light of these characteristics, researchers in the field of marketing are increasingly focusing on how this technology redefines the relationship between three key elements: data, trust, and the exchange value between consumers and brands.

In this context, the study by Rejeb Abderrahmane and his colleagues (Rejeb et al., 2020), is considered one of the early systematic academic contributions that attempted to show the impact of Blockchain technology on marketing. It proposed six research areas, including advertising fraud prevention, privacy protection, loyalty programs, and disintermediation. Since then, this work has been used as a reference in many later studies. Its real value, however, lies more in the research questions it raises then it provided empirical answers which the authors themselves acknowledged in their conclusion.

A later study by Stallone and his colleagues (Stallone et al., 2023), offered one of the most in-depth empirical analysis in this area. It is based on detailed interviews with experts in the digital advertising sector. The researchers found that using Blockchain in digital advertising can indeed lead to measurable improvements in transparency and a reduction in fraud. At the same time, they pointed out that actual adoption is still limited by a set of regulatory and operational challenges. This makes large-scale imp unlikely in the near term.

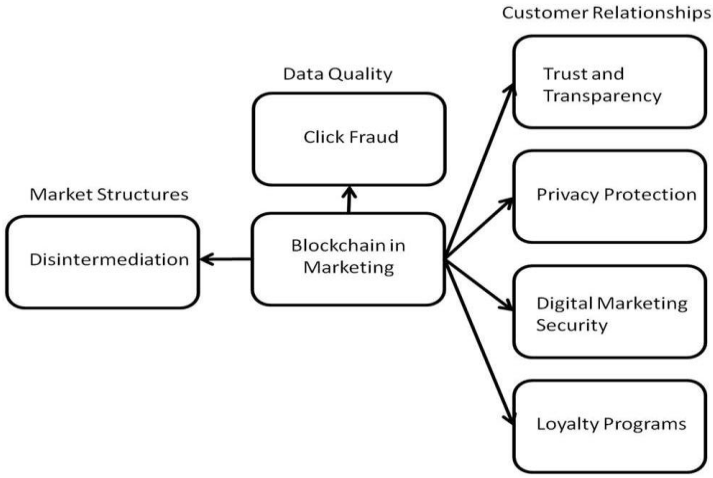
On the other hand, Peres and his colleagues (Peres, Andrew T. Stephen, Veena Chattaraman, & Al, 2023), provided an important contribution by mapping out the main opportunities and risks that Blockchain presents for marketing research. What stands out in the study is the recognition that both academic research and practical applications

in marketing are still somewhat cautious when it comes to using Blockchain and have not yet fully absorbed its potential. This conclusion highlights a real gap between the promotion of the technology and its actual use in the marketing environment.

From another perspective, the study by Tan & Saraniemi (Tan & Saraniemi, 2024), highlighted the importance of shifting the role of the consumer from a passive position to a more active partner, along with the move from a centralized marketing management to a decentralized one. However, it can be noted that this study relies mainly on conceptual analysis, without sufficient use of field data to support its conclusions.

Based on the above, we will attempt to identify the impact of Blockchain technology on marketing as shown in the following figure:

Figure N°01: The impact of Blockchain technology on marketing



Source: (Rejeb Abderahman & al, 2020, p3).

The role of Blockchain technology in reshaping the structure of digital marketing can be outlined as follows:

1- Reducing intermediaries process in marketing processes:

The digital advertising economy is dominated by a complex chain of intermediaries. This includes: ad networks, demand-side platforms (DSPs), supply-side platforms (SSPs), ad servers, and verification providers. These long chains can take a significant share of advertising spending, estimated at around 40% to 70% according to several global reports (ISBA & PwC, 2020). In contrast, Blockchain makes it possible through smart contracts to connect advertisers directly with publishers,

based on conditions agreed upon by both parties. These agreements can then be executed automatically once the conditions are met, without need for intermediary. This potential has already appeared in some early initiatives, such as the AdLedger project, which developed an open protocol for settling digital advertising transactions on the Blockchain (AdLedger, 2023).

2- Strengthening disintermediation:

Blockchain technology can contribute to strengthening disintermediation, or decentralization by allowing more direct targeting of customers, while also improving service responsiveness and expanding advertising campaigns. Its interactive and integrated features help marketers deliver advertising content to customers more directly and remove activities that do not add real value to the marketing process. Organizations can also offer incentives to customers in the form of loyalty programs, which helps build a more direct relationship between consumers and brands. At the same time, the decentralized nature of Blockchain opens the way for a different model of customer participation, where users can be more involved and engaged (Remdani, 2025, P593-595).

Blockchain technology can also help reduce intermediation costs, which is particularly important for marketing actors. Digital advertising that relies on online intermediaries, especially programmatic advertising, has become the dominant form of digital ad spending by 2025, accounting for around 90% of global digital display advertising. This spending is estimated to exceed 600 billion dollars annually (Global Ad Spend Forecasts dentsu, 2025), in a context of increasing reliance on digital intermediary platforms that enable automated ad buying in real time.

3- Fighting fraudulent clicks:

Fraudulent clicks do not only affect costs, but also pose a real threat to advertising campaigns and weaken trust in this advertising model. In this sense, Blockchain can be seen as a possible solution to this issue, mainly through the following:

- The immutability, transparency, and decentralized nature of Blockchain make it possible to create a distributed record that documents every ad impression, click, or conversation in a way that cannot be altered or falsified. This helps reduce, to a large extent, any manipulation or fraud in measuring campaign performance. This was illustrated in the case of Toyota, where applying Blockchain-

based records to its advertising campaigns led to about a 21% improvement in performance, mainly due to more accurate and reliable data (Stallone, 2023, pp. 290-315).

- It also offers a way to deal with data inconsistency, which helps improve monitoring and supervision of publishers through a more detailed analysis of credibility, past records, and qualifications.
- It makes it possible to track potential customers in real time, review campaigns, and rely on the stability of Blockchain records to limit the ability of pay-per-click providers to benefit from fake traffic and fraudulent clicks.

In this context, it can be said that Blockchain brings together transparency, resistance to tampering, and the reduction of intermediaries within the digital advertising system, which makes it a direct response to one of the major problems in the sector.

4- Strengthening trust and transparency:

Blockchain technology is commonly associated with greater transparency and stronger trust. This is mainly due to its ability to record transactions in permanent, time-stamped, and transparent ledgers, which reduces uncertainty. Through the tracking feature in Blockchain, consumers can also verify whether a brand complies with defined product quality standards (Rathnakar, 2019, p. 78).

5- Data protection and privacy:

Blockchain-based decentralization allows a shift in the data ownership model, moving away from a situation where commercial platforms have almost full control and use of consumer data, toward a more participatory model. In this model, users have greater control over their personal information, and may even manage it directly by setting conditions for sharing it with advertisers in exchange for direct compensation (Qaisar & al, 2024, pp. 19-32).

The future of digital marketing in the context of Blockchain is moving towards the decentralization of data management. It is not limited to improving security, but it also brings a kind of ‘’redistribution’’ of data ownership back to consumers. This in turn, forces marketers to adapt to models based on user consent and actual participation.

6- Strengthening security and digital marketing:

Information security is a key pillar in the digital marketing system. It is directly linked to the level of trust that consumers place in a brand

within the online environment. With a continuous rise of cyber threats such as: personal data theft, privacy violations, and financial fraud, the need for a strong and reliable technological infrastructure has become unavoidable. In this context, Blockchain technology has emerged as a technical response to these challenges.

Blockchain security mainly comes from the fact that data is not stored in one central place. Because of this distributed structure, there is no single point of failure. This is often what attackers target in traditional centralized systems. This security is also supported by several mechanisms that work together, such as: asymmetric encryption, digital signatures, and controlled access to data. In practice, these features matter for digital marketing because they allow companies to keep information like: pricing, product catalogs, market research results, and promotional strategies consistent across all nodes in the network, while still keeping its transparent and reliable.

The value of this decentralized security is reflected in the fact that it provides consumers with a single version of truth regarding brand values and characteristics, which helps strengthen their trust and reinforces loyalty. Furthermore, decentralization gives brands a higher resistance to denial of service attacks (DoS), and it helps ensure service continuity even in the face of disruptive attempts. The transparency embedded in Blockchain architecture also supports accountability and closer monitoring. This makes it possible to correct errors and respond to violations when they occur (Rejeb Abderahman et al., 2020, p 6).

From this perspective, Blockchain technology represents a qualitative shift in the concept of marketing security. It moves it from being a post-event protective measure to a built-in design feature within the sarketing system itself, creating a more secure and trustworthy environment for all stakeholders.

7- Building loyalty models:

Decentralization has brought a qualitative change to loyalty models and marketing reward programs. The decentralized marketing structure allows the creation of more interactive and flexible loyalty programs, where consumers can attack their reward points, exchange them across different platforms, and even trade them more freely. Studies have also indicated that this technology enables marketers to access, in real time, consumer profiles, purchasing patterns, and payment histories. This makes it easier to design more attractive and personalized loyalty programs. This trend has been illustrated by American Express, which

integrated hyperledger technology to award reward points based on product characteristics rather than relying only on overall spending behavior (Rejeb Abderahman & al, 2020, p. 7).

In light of the above, decentralized marketing can be understood as one of the recent concepts that goes beyond the simplest use of Blockchain as an additional technical tool. It becomes a new operational model that helps reshape the distribution of power between companies, consumers, and intermediaries. It also brings about important changes in the field of marketing, most notably the shift of the consumer from a passive role to a more active and central one, the move from centralized marketing management within companies to decentralize management, and the evolution of brand building from a single platform dominant model, to a more collaborative model shared among all stakeholders.

Thirdly: The impact of Blockchain on marketing practices: Global application models

Blockchain technology has not remained at the level of theoretical discussion only. It has also been translated into practical models around the world, becoming one of the tangible transformations in the structure of marketing practice at several levels. The following are some Global application examples that have reshaped the relationship between consumers, brands, and advertising intermediaries through the use of Blockchain technology.

1. **Brave browser model: Restructuring the digital advertising economy**

The Brave browser and its associated crypto token, known as Basic Attention Token (BAT), are considered one of the most developed and well-documented practical models in the field of the centralized digital marketing. The token was launched in 2017 by Brave Software under the leadership of Brendan Eich, the creator of javaScript and a co-founder of the Firefox browser. It secured successful initial funding through an Initial Coin Offering (ICO), raising around 35 million US dollars in only 30 seconds, which showed the strong market momentum surrounding this model (Software, 2017, pp. 14-20).

The model is based on an innovative marketing and technological logic that seeks to tackle the weaknesses found in the traditional digital advertising system. In the dominant model, user data is sold to advertisers as a commodity without clear consent and without direct compensation, why the user remains a passive party who is used rather than rewarded.

In contrast, the BAT model redistributes value among three more balanced parties: Users who voluntarily choose to view privacy-respecting advertisements and earn BAT tokens in return, content creators who receive direct financial support from users in exchange for the quality of their work, and advertisers who gain access to a verified audience that has explicitly agreed to receive their messages (BAT Ecosystem Overview, 2025).

What distinguishes this model is that ad matching takes place locally on the user's device through machine learning integrated into the browser, without sending personal data to external servers. In this way, it creates a rare balance between personalization and privacy at the same time. The model has also shown practical scalability. During 2024, Brave reported more than 70 million monthly active users, why is the number of verified content creators within the network exceeded one million nine hundred thousand worldwide. It also hosted thousands of advertising campaigns for major brands (Brave Software, 2024).

From an academic perspective, this model can be seen as an example of what Treiblmaier described as the shift of marketing from the informational internet to an internet of value and trust, where human attention itself becomes a digital asset that can be objectively measured and exchanged more fairly (Treiblmaier, 2018, p. 554).

2. The model of crypto-based loyalty programs in the airline and hotel sectors:

Specialized research has shown that traditional loyalty programs in the airline and hotel sectors suffer from a growing structural problem. According to the bond brand loyalty report for 2024, 50% of travelers expressed frustration with the rigidity of traditional loyalty programs and their lack of flexibility, while nearly 1/3 stated that they had abandoned them completely (Bond Brand Loyalty, 2024). The main weaknesses are centered around the expiration of points, the restriction to a single brand, the fluctuation of redemption value, and the slow rate at which they are accumulated. Blockchain technology has emerged as a direct response to these issues.

In the airline sector, the experience of Singapore Airlines with the KrisPay platform is considered a distinctive example of using Blockchain technology in loyalty programs. The company worked with KPMG digital Village and Microsoft, and succeeded in launching the world's first Blockchain-based digital wallet dedicated to Airline loyalty. The idea is simple but innovative. It allows members of the

KrisFlyer program to convert their accumulated miles into digital tokens that can be spent immediately at participating merchants in their daily lives. This opened a new way of dealing with loyalty points and made them more flexible and useful (Nadcab Technology, 2025).

The innovation in this model lies in breaking the barrier between the financial markets spheres. Airline miles are no longer treated as a restricted accounting unit, but become a digital asset with an exchange function similar to electronic currency. This improves the overall customer experience, and strengthens the consumer's connection with the brand beyond the travel cycle. The use of private Blockchain within this system also provides a higher level of scalability and faster processing when compared with public chains, while still preserving the benefits of immutability, transparency, and immediate verification.

In the hotel and tourism field, one notable example is the European travel group TUI. The group introduced a booking system based on Blockchain to manage hotel room reservations across different sales channels. This helped update room availability instantly and reduced many of the disputes that usually rise over prices or room availability (TUI Group, 2024). Lufthansa and Air New Zealand took a similar Direction by partnering with Swiss platform Winding Tree to develop travel applications using Blockchain technology. The aim was to recover part of the value that is often lost through the fees charged by traditional intermediaries. This supports the view expressed by Rejeb and his colleagues that Blockchain can contribute to building loyalty programs that are more creative and better connected.

3. The model of verifying brand assets and creative content through Blockchain:

The verification of a brand's digital assets and the protection of intellectual property rights in the decentralized digital space are among the main areas where Blockchain is changed in marketing practices. With the growing spread of counterfeiting and the unauthorized use of creative digital assets, non-fungible tokens (NFTs) have emerged as a promising technical and legal framework for protecting brand identity and confirming ownership of creative content.

This system of verification relies on a structured technical process. Through Blockchain, a fixed time record is created that cannot later be changed or deleted. It shows when digital asset was first created, who created it, and the sequence of transactions that followed afterward. In practical terms, this gives strong proof of original ownership

(provenance) and can also support the automatic enforcement of intellectual property rights through smart contracts (Patent, Trademark Office, 2023). The Word Intellectual Property Organization noted in a 2022 report that Blockchain technology could play an important role in improving the registration of intellectual property rights and making their enforcement easier across different countries.

In the same context, the Verisart platform offers a notable example. It uses Blockchain technology to issue digital certificates that are resistant to forgery, which proves the authenticity of artworks and creative products. It also allows these assets to be converted into tradable NFTs, while keeping instant verification of their identity possible. The Bernstein platform provides a similar service through an authenticated historical record of innovation and creation. It allows users to register digital assets of any size or format in order to prove existence, ownership, and chronological development in real time. As for the relationship between consumers and brands, non-fungible tokens can have a visible effect on brand management. They strengthen consumers' sense of perceived ownership of over brand-related elements, which may create deeper loyalty when compared with traditional loyalty programs (Colicev, 2023, p. 539).

However, these three models are not free from structural issues that deserve attention. In the case of the BAT model, the number of major advertisers remains much lower than on traditional advertising networks, and this affects the opportunities available to users. In addition, many users still face difficulties when trying to convert the tokens they earn into real money. As for loyalty programs built on crypto systems, one major challenge is the limited interoperability between different Blockchains. There is also uncertainty regarding their legal recognition, especially because regulations differ from one country to another.

In the area verifying creative assets, the permanent nature of Blockchain records creates another difficulty. Since data is designed to remain stored, applying the idea of the digital right to be forgotten becomes more complicated. This raises important challenges, even in the presence of data protection laws such as The European General Data Protection, which recognizes that right.

These challenges open up a wide space for further research and study, especially regarding how to combine technology with regulation and how to develop solutions that balance the strengths of Blockchain technology with smart and well structured digital governance. The aim is

to ensure the protection of individuals' rights and respect for privacy, while making use of modern tools in a balanced at practical way.

Conclusion:

The findings of this research show that Blockchain technology has gone beyond being just an additional technical tool in marketing. It has become an operational model that has contributed to reshaping and transforming the structure of digital marketing itself. The main results can be summarized as follows:

- The problems affecting traditional digital marketing, such as: Advertising fraud, the dominance of intermediaries over advertising spending, and the lack of transparency in the handling of consumer data, have made it necessary to look for more fair and efficient alternatives. Blockchain technology has emerged as a real response to these issues by offering greater transparency, stronger security, and the reduction of intermediaries.
- Blockchain is not just a technical solution added to existing digital marketing tools, but rather a shift in the way the relationship between advertisers, consumers, and intermediaries is understood. Programs such as Brave/BAT and Singapore Airlines' KrisPay have effectively shown that the consumer can become a partner in the marketing process rather than only a target. Through smart contracts and decentralized mechanisms, they enable direct and secure marketing relationships between advertisers and consumers, which helps rebalance the value system among all actors involved.
- The practical models discussed in this study have shown that the shift toward decentralized marketing is not only a theoretical idea, but an emerging reality that is already being adopted across different and fast-growing sectors. However, the wider implementation and Adoption of this technology in marketing is still relatively slow and at an early stage. The reasons are not purely technical; they also include the lack of clear legal regulation, limited technical capacity within marketing teams, and difficulties in interoperability between different platforms.

In conclusion, this study captures a real transitional phase in digital marketing, a stage that is not yet fully mature, but is clearly taking shape. The question raised by the findings is no longer whether Blockchain will affect marketing, but rather when and how this impact

will become significant enough to bring about a real shift in current practices.

Recommendations:

Based on the previous results, some important recommendations can be made for decision-makers in economic institutions as follows:

- Institutions should begin by applying Blockchain technologies on a limited and measurable scale, such as crypto-based loyalty programs and advertising performance tracking systems, before moving towards large-scale structural changes, why carefully evaluating the actual return on investment at each stage.
- There is also a need to invest in building technical human capital by introducing specialized training in Blockchain technology and its marketing applications within human resource development programs for marketing teams, in order to ensure a correct understanding of the technology and its effective use.
- There is a need to adopt explicit consent models and to re-empower voluntary consent and real user participation, in response to the rapid regulatory changes in personal data protection.
- Regulatory authorities should work on establishing clear legal frameworks that govern the use of smart contracts and digital tokens in marketing contexts, while avoiding excessive regulation that could limit innovation.
- New models should be developed to integrate Blockchain technology with other digital marketing tools such as artificial intelligence.
- Cooperation between governments, universities, and marketing companies should be encouraged in order to develop joint projects that promote the use of Blockchain technologies in marketing.

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