The Impact and the Potential Disruption of the Blockchain Technology on Marketing

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Abstract

The blockchain (a distributed ledger) is commonly known as the backbone of the emerging digital cryptocurrencies, such as Bitcoin, and potentially disruptive technology for the monetary system and the financial industry. However, the impact of the blockchain technology goes beyond financial sector and could also influence supply chain management, commerce, health care, real estate, data storage, supercomputing power, decentralized notarization, marketing etc.

In this paper we examine the potential of blockchain technology to influenceand even disrupt marketing. The areas of influence of the blockchain on marketing include but are not limited to creation of new products and services, ensuring trust and transparency, disintermediation, privacy and data ownership, digital identity, customer relationship management, loyalty programs, advertising, fighting click fraud, supply chain management, etc.

Since the application of the blockchain in marketing is novel, mostly conceptual, unmatured and still in development the influence and the potential disruption of this technology is envisioned for the years to come. Anyway, there are already promising projects that have potential to change the landscape in this industry and to provide first-movers advantage for the existing or the emerging brands.

Keywords

Blockchain, Marketing, Disruptive Technologies, Advertising, Supply Chain Management.

1. Introduction

In the past decades, thanks to the digital revolution and the use of the internet the way marketing is practiced changes significantly[1]. With the emergence of the blockchain technology another potential revolution in the field of marketing may be on its way.

The blockchain is a type of a distributed ledger that stores encrypted, consecutive blocks of transactional data in order to achieve secure, transparent, trusted and real-time online transactions. The blockchain system helps to store the data at multiple locations while ensuring security and verification [2]. Characteristics of the blockchain technology that may potentially change or even disrupt how business (and marketing) are performed include but are not limited to: decentralisation, security (of the system), immutability, transparency, trust

(by design), auditability, privacy, anonymity, efficiency and automation (of smart contracts) [3],[4],[5].

Researchers point out that the blockchain technology is already disruptive for the financial sector [6],[7],[8], but the impact of the blockchain goes beyond this sector and affects other industries too [9],[10],[11],[12]. The affected areas include but are not limited to agriculture, supply chain, tourism, energy, stock market, trade finance, healthcare, education, business models, voting, notary, proof of identity, authorship, internet of things, insurance, real estate[13],[14],[15] and potentially the marketing.

Regarding the influence of the blockchain technology to areas of marketing several studies research these issues. Sihi [16] investigates decentralisation, immutability, and transparency to increase the rapid acceptance of marketing and acceptance for users. With the help of blockchain technology, it becomes easy for the transaction to be verified without involving a third party as this could be important underlying technology. Many companies are now convinced with the protected network to secure digital rights and preferably create the decentralised apps [17]. Blockchain technology assists companies to have public recognition and ensure the verification of data, this further allows recording the information to provide leverage for the marketers [18]. As per the customer needs related to the technology positive attributes, the data protection, and transparency are the major aspects fulfilled by the blockchain system towards the marketing. The landscape of digital marketing experiences some evolution as a result of enabling the new kind of digital advertising for attracting consumers. With transparency, easier traceability and enhances security, the blockchain digital platform can lead to benefits and reflects new opportunities to open the business practices for the consumers.

With the blockchain encryption mechanism, the marketers can now come up with more new ways to use the data for improving the operation and advertisement strategies [19]. There is a strengthening contribution observed to protect the data privacy rights that will help to boost the confidence of consumers. Blockchain supports the transparency of data and increases the trust level in many ways. From the marketing perspective, the blockchain platform proceeds the activities by ensuring verifiable and transparent data that is the most considerable thing so far [20]. There is no doubt to discuss that social media platform opens the ways to influence the consumers and plays an important role to boost the brand image. In this manner, the blockchain platform promotes smart contracts in which there are authentic exchange facilities with beneficial cross promotional marketing practices [21]. It is typically believed that blockchain is associated with finance, cryptocurrency, and economics, but there are much broader applications to be considered [22]. For all business practices, the blockchain sets the standards to do digital marketing and advertising and assists the marketers to remove the uncertainties. This ultimately upgrades the way to conduct business practices online.

Antoniadis et al [9], Rejeb et al [20], Morkunas et al [10] and Brauer& Eriksson [23] in their studies make an attempt systematically to explore and elaborate potential uses and applications of the blockchain technology in the field of marketing in general, targeting several specific areas of use.

Having in mind the research question of our study: "How blockchain technologies impact (current and future) marketing practices?", we point out that the main purpose of this research paper is to gain a comprehensive understanding of the possible applications and the influence of the blockchain technology on the overall marketing activities and the future of marketing in light of this technology.

Expected contribution of the study, from academic perspective, is to summarise the most recent and prominent studies in this field, to widen the areas of potential impact on marketing not treated in the academic literature and to point out areas of further research in blockchain regarding the marketing practise. From practical perspective, we expect this study to help executives, marketing managers and marketers to better understand the potential of the

blockchain technology and to include blockchain applications in their short and long-term marketing strategies.

2. Influence and possible disruptions of blockchain in marketing

The potential influence of the emerging blockchain technology on the marketing activities is apparent and could be witnessed through three different types of sources/indicators. The most obvious and first in line are the real use cases that constantly emerge, although, none of these solutions become mainstream yet regardless of their disruptive potential. The second indicator for influence and possible disruption of the marketing industry, are the concepts and the envisions of the practitioners, developers and analysts explained trough popular web articles, whitepapers and pilot projects. At the end, but not least important, are the studies done by the scholars that besides describing the existing applications also envision promising use cases based on the current issues in the marketing field and the important features of the blockchain technology.

UFOstart [24], a marketing network that helps blockchain start-ups lists 47 different blockchain projects in the marketing industry. The projects are divided in 7 different categories: Social media (16 projects), Ad networks (15), Affiliate networks (7), Video (platforms) (4), Agencies (1), Influencer marketing (1), and Others (3). Daley [25], Mire [26] and Nirolution [27] in their web articles explain several use cases and companies that address certain problems in the field of marketing utilizing blockchain technology. Among these use cases and applications of blockchain technology in the field of marketing there are some already notable projects that we will elaborate later in this paper.

Regarding the academic sources, Antoniadis et al [9], identify potential uses of blockchain in marketing, and present them in a mind-map format where the main branched areas of use are in supply chain management, payment, marketing management, loyalty programs, digital marketing, reviews and credential management. Further, these areas are sub-branched in more specific use cases like smart contracts, fraud prevention, advertising, anonymity etc. Rejeb et al [20] present "six propositions that will guide future blockchain-related research in the area of marketing" and these are disintermediation, click fraud, trust and transparency, privacy, security, and loyalty programs. Brauer and Eriksson [23] in their extensive study discuss several possible areas of influence of blockchain over marketing like big data, digital identity, trusted data, data ownership, transparency, customer knowledge, digital marketing mediums (communication channels) etc. Morkunas et al [10] talk about the possible impact of the blockchain on the business model in the light of the "Business Model Canvas" where they envision impact of blockchain in some marketing areas like key partnerships, value proposition, customer relationships, channels and customer segments.

According to Gartner [28] blockchain rewards/loyalty models and smart contracts could go mainstream in 2 to 5 years, while blockchain in supply chain, logistics, retail, media, business models, customer service, advertising and lead generation would need 5 to 10 years to reach the plateau of productivity.

Table 1. Influence of blockchain technology in specific marketing areas
(Source: Own observations)

Marketing related areas/issues	Important features	Use cases	Projects
Digital identity	Trust, Privacy, Security Ownership of data	Digital ID, self-sovereign identity, credit history, refugee identity, medical records	Hyperledger Indy, IBM Verify Credentials, Medicalchain,

New Products and Services	Trust, Transparency, Disintermediation, Privacy, Ownership of data	Decentralized apps, digital and cold wallets, P2P payments, decentralized notaries, etc	Uniswap (decentralised cryptocurrency exchange), EarnBet.io (decentralized casino), Brave (privacy browser), Ledger Nano (hardware wallet),
New Business Models	Trust, Transparency, Disintermediation, Privacy, Ownership of data	decentralized autonomous corporation, revenue sharing.	The DAO (venture capital fund), KuCoin (revenue sharing cryptocurrency exchange)
Supply Chain Management	Trust, Security, Disintermediation, Ownership of data	Replaces current SCM systems	MediLedger (medicines), IBM Food Trust (foods), Provenance for Martine Jarlgaard (textile)
Customer Relationship Management (CRM)	Trust, Disintermediation, Privacy, Ownership of data	Replaces current CRM systems	Care Network, Salesforce Blockchain
Loyalty Programs	Trust, Transparency, Privacy	multiple brands involvement, single loyalty wallet, tokenized reward points (instead of coupons), exchange or selling reward points	DigitalBits (marketplace for loyalty points), American Express rewards program, Singapore Airlines flyer program.
Advertisement and Click Fraud	Trust, Transparency, Disintermediation,	Fighting click fraud, targeting while preserving privacy, cost efficient advertising, trusted affiliate partnerships.	Mediaocean Blockchain, AdEx Network, RefToken affiliate platform.

In Table 1. we present our initial findings of possible marketing issues/areas affected by the blockchain technology, important features in these areas, potential use cases and ongoing projects. Having these observations and findings in mind we will further elaborate specific features, areas, and applications of the blockchain technology that have potential to influence, change or even disrupt the marketing practices in the digital world. The issues found in the Table 1. not further discussed in this paper are still potential areas for further academic research.

2.1. Trust, transparency and disintermediation

The trust and the transparency are among the most important features of the blockchain technology. The transparency of the blockchain system comes from the nature of the distributed ledger that is accessible, all transactions are traceable and easily audible. The level of transparency of the blockchain could be adjusted through powerful cryptography regarding the requirements of its application. For example, specific data in the transitions could be accessible only for specific participants as needed.

The trust in the blockchain system, otherwise known as "trust by design", comes from (1) its transparency, (2) the decentralisation where no single entity has full control and from (3) the

immutability of the transactions. These features may be crucial for some business models and/or some marketing activities. According to Rejeb et al. [20] a brand's success depends on the level of trust and transparency that it can generate.

The trust and the transparency of the blockchain also aid disintermediation, the process of removing the unnecessary intermediaries. Usually these intermediaries facilitate the transactions and serve as trusted parties among partners that don't know each other. Anyhow, the intermediaries increase the cost of the services, could slow the transactions (at least one more participant involved), decrease the transparency (they protect sensitive business information) and furthermore, it even happens that they could break the trust too. For example, this could be done by not doing enough to track or prevent click fraud [29], or as in the Facebook–Cambridge Analytica data scandal when Facebook illegitimately sold users' personal data [30]. So, the blockchain, not only that could bring trust and transparency among the interacting parties, but also makes the intermediaries obsolete by overtaking their role and adding more value in the process.

Currently many marketing activities as advertising, search engine and social media optimisation, media buying, affiliate networks, payment processing, supply chains are done through intermediaries, especially in the online environment. Since these areas face several challenges as increased costs, low transparency, decreased trust, dependence on social media and search engines, illicit activities, click fraud etc. [31],[32],[33] it is evident that this industry is ripe for disruption from the blockchain solutions and there are already promising projects in these areas addressing the trust and transparency issues (described later in this paper).

2.2. Privacy, knowing the customers, ownership of data and personalisation

The privacy is also important feature of the blockchain technology and at first glance it may seem contradictory with the transparency of the system. Anyhow, the transparency reflects the transactions in the system, while privacy reflects personal and sensitive data of the participants, including the associations to particular transactions. These distinction/separation in the blockchain is achieved through powerful cryptography. The privacy is achieved not only by not-disclosing personal and sensitive data publicly but also serving only necessary data about the participants and algorithmically confirming identity, credentials and/or characteristics of the participating parties. Having this in mind, it seems that the blockchain properties are favourable for managing the digital identity with desired level of privacy for individuals and organisations [34],[35]. With the concept of digital identity on the blockchain the individuals and the organisations may control (own) their sensitive and personal data, and my decide when and with whom to share it. They even may decide to accept payments (and/or other incentives) to disclose data (or make it algorithmically available but with anonymity) to companies for advertising or for personalisation purposes.

The privacy further increases trust in the system by ensuring the users that their private (or proprietary) data wouldn't be accessible, shared or sold to other parties or abused in any way. This, on the other hand, challenges the marketing industry since it may highly limit; (1) the knowledge of customers [16], (2) precise targeting and (3) personalisation of content and services. The blockchain solution provides the shift in which the individual owns the data rather by companies as this enable the consumers to gain control over the data and make them independent for the decision to share their data. Therefore, marketers, medias and the other participants in the marketing activities must find a way to convince the customers to share personally identifiable information (PII) safely via trusted blockchain systems. Such attempt is made by the Brave Browser [36] which blocks unsolicited ads and enables users to opt-in for ads, incentivised by BAT tokens as a reward. The ads are not pushed by the advertisers but are pulled by the browser, based on the characteristics and the personal preferences of the user without disclosing any personal information.

Another use case of the blockchain technology that values the ownership and authorship of data are the decentralised social media that share revenue with the users that generate and share valuable content in the network. Such network areSteemit,com, that resembles Reddit, and the announced (still in beta) Voice.com, expected to resemble Facebook and/or Linkedin.

2.3. New products, services and business models

The starting element in the marketing mix is the product, and the implementation of the blockchain technology already brought many new or improved products and services to the market and promises to bring many more innovative solutions [14],[37],[38].

These products include but are not limited to decentralised apps, decentralised exchanges, decentralised social media, privacy browsers, revenue sharing projects, decentralised crowdsourcing, P2P payments, digital wallets, cold (hardware) wallets, supply chain management solutions, digital wills, decentralised notaries, decentralised lotteries and casinos, ad and affiliate networks, decentralised and secure storage, grid computing etc. Many of such offers are in their pilot phases but some are already fully functional projects like Uniswap (decentralised cryptocurrency exchange), EarnBet.io (decentralised casino), Brave (privacy browser), Ledger Nano (hardware wallet), IBM Food Trust (decentralised supply chain management) etc.

The above-mentioned products (and projects) may be new in nature but most of them compete with existing once and could offer potentially better solutions and therefore could challenge or even disrupt the existing business models. Additionally, having in mind the features and the hype around the blockchain technologies, they may exploit new marketing channels and also may require specific approach in the marketing, what may additionally change the landscape of the digital marketing practices. For example, many of these products/business models are accompanied by own, native cryptocurrencies that could be used to attract/incentives new customers to join the system. The influence on the marketing activities of these products and services is (potentially) most evident through the projects that address specific marketing issues like the decentralised social media, the ad networks and the affiliate networks.

The revenue sharing business models that already take place in the new blockchain revolution are potentially most disruptive for many businesses and even for entire industries. The value of a business and/or a network increases as more users join (the networks effect), so the reasoning behind the revenue sharing models is to give back earnings to those who generate them in a first place – the users themselves (the customers). These models are enabled/simplified by the blockchain technology and empower almost any business/product that runs on a blockchain with this powerful feature that could be used to attract more partners, users and investors in the system. Such examples already exist in the social media (Steemit), cryptocurrency exchanges (KuCoin), privacy browsers (Brave), decentralised casinos (EarnBet.io) etc.

2.4. Supply chain management

The supply chain management (SCM) and marketing are considered as two different functions in the company, but they are highly intertwined [39]. The SCM affects the stability of inventory and the distribution of goods and services, could influence the trust of the consumers about the ethical practices in the chain of production, row materials in use and ultimately the overall brand quality. The inevitable application of blockchain in the SCM is justified by the rise in the efficiency, removing the unnecessary intermediaries, increasing the transparency of the overall system and fortifying the trust of the participants and end consumers [40].

There are several blockchain projects aiming to improve the SCM in their industries and the list is constantly growing. The MediLedger [41] is a blockchain based product verification system designed to enable the pharmaceutical industry to check the authenticity of prescription medicines. IBM Food Trust, used by companies like Walmart, Nestle and Dole, is a blockchain based food tracing system aiming to improve supply chain efficiency, minimise waste and increase food quality, freshness and safety [42]. Provenance helped Martine Jarlgaard, a fashion brand from London, to provide verified information about the materials, processes and people behind products using a blockchain supply chain management system [43].

2.5. Customer relationships

Having in mind the features of the blockchain as trust, privacy, digital identity, ownership of data and security it seems that this technology could bring the customer relations to another level.

It is believed that the blockchain is highly suitable for improvements in the customer relationship management (CRM) systems [44],[45],[46]. Analysts at Gartner [47] expect that in the next "two to three years" all major ERP and CRM providers would offer blockchain capabilities to their platforms.

These new generation CRMs would include trust, security, efficiency, ownership of data, loyalty programs, etc. in their value propositions, and potentially new leads generation and cross-platform/cross-brand services [48].

Recently, Care Network raised $5 million (in total) with a promise to bring the CRM to the blockchain and "give businesses back ownership of their data and allows them to quickly build up their own customer data ecosystems" [49]. The Cere Blockchain CRM would capture the entire customer journey on the blockchain and would stores key user data such as purchases, achievements, and usage in the user's own wallet.

Another area for potential improvements by blockchain technology are the loyalty programs. The advantages of the decentralized loyalty programs include privacy, security, interoperability and multiple brands involvement, single loyalty wallet, tokenized reward points (instead of coupons), exchange or selling reward points, etc. [20].

2.6. Advertising and click fraud

While online advertising flourishes (especially for the intermediaries), concerns in this industry come from the consumers, the advertisers and the publishers. Consumers are mostly concerned about their privacy, advertisers about the click fraud and publishers about their decreasing revenue share [33].

Consumers perceive tracing and personalisation as "creepy and scary" due to lack of transparency [50], and significant degradation of their browsing experience. Therefore, they may overtake some "radical" measures as ad-blocking that is negatively affecting the industry [51].

Advertisers will lose an estimated $44 billion to fraudulent activities in 2022 [52] since up to 30% of all ad clicks are result of click fraud [53]. On the other hand, it is estimated that the publishers get as low as 40% of ad expenditures [54], while the rest goes to the intermediaries. Additionally, since these figures are only estimations it is obvious that this industry lacks transparency.

Evidently, all three principal parties in online advertising (consumers, advertisers, publishers) could benefit from bringing more trust, transparency and disintermediation in the industry, something that could be facilitated by blockchain technology.

While Pärssinen et al [33] conclude that that blockchain is not yet ready to be widely implemented in online advertising and Gartner's Hype Cycle for Blockchain Business estimates that it will need 5 to 10 years to achieve wider adoption [28], there are already promising projects in this area, for example the Mediaoceanad baying blockchain in partnership with IBM.

3. Conclusion

The current online marketing landscape is ripened for improvements and disruptions since it is full of intermediaries, privacy invasions, fraudulent activities, "dirty" secrets, and many uncertainties. The missing transparency and trust are evident in this industry, but the "big" and established players (search engines, social medias and the intermediaries) do not show interest to solve all these issues since it could erode their earnings, power and dominant positions.

The most interested parties to resolve these challenges are the customers who want to preserve their privacy but still get quality interactions with the companies, the companies who want to effectively spend their marketing budgets and gain more control/knowledge about the customers base and, at the end, the publishers who want to preserve their reputation from (click) frauds and keep their portion of the advertising budgets. In this group of interested parties we can add the innovative companies who are trying to address these issues in order to gain competitive advantage and establish reputable brands in the field of the online marketing services in order to challenge the existing players.

The blockchain technology with its prominent built-in features by design as transparency, trust and security, promises to help solving important marketing issues in an effective way. The technology is still novel and in development, especially in the marketing filed, but we have already seen promising projects with high potential to improve or even disrupt certain areas in the marketing.

Our research focused to identify and explore various areas of the marketing activities that could be affected by implementation of the blockchain technology. These areas include creation of new products and services, ensuring trust and transparency, disintermediation, privacy, data ownership, customer knowledge, personalisation, digital identity, customer relationship management, loyalty programs, advertising, fighting click fraud, revenue sharing models and supply chain management.

While, the widespread of these innovative solutions in the marketing areas may lay ahead 2 to 10 years, the companies that ignore the disruptive potential of the blockchain technology may lose their current positions or miss promising business opportunities.

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