



IMPLICATIONS OF BLOCKCHAIN TECHNOLOGY ON MARKETING

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Abstract:

Trust issue gradually becomes more of a concern in the 21st century business environment. Recent research sheds light on the erosion of trust to brands on a global basis. Traditionally, trusted third parties take place to ensure the trust needed for business transactions to take place. Digitization, advances in peer-to-peer networks and cryptographic technologies have advanced to such a point that exchange of currency, as in the case of Bitcoin, and even value as in the case of property rights, securities, ownership etc. can be done over Internet with Blockchain technology serving as a trust layer baked into the protocol. Blockchain technology serves as the missing trust layer in the evolution of Internet. This paper explores implications of Blockchain technology on marketing discipline from various aspects. The paper pinpoints the key strategies marketers need to adopt to survive in the rapidly evolving business landscape. Finally, conclusions are drawn regarding future direction of marketing as affected by those technological advances.

Keywords:

Blockchain, Digital Marketing, Marketing Ethics, Consumer Trust, Disintermediation

1. Introduction

Historically, breakthrough society-wide technological advances have far reaching effects. Not only do they bring about brand new ways to do business, but they also alter and raise customer expectations, hence changing the nature of the customer-brand relationship. For example, the Internet permanently changed the way we perceive information phenomenon. With the advent of the Internet, information consumption is no longer one-way communication process but rather is a two-way dialogue of the brands with the customers. Likewise, Blockchain is set to radically change consumer perceptions on Internet medium by making the Internet as a trusted means for transfer of value of any kind - not just information. Therefore, Blockchain is to raise customer expectations on trustworthiness and transparency to new heights when conducting business with the brands. In the end, claims without proof will remain just claims and will have no value by themselves.

Blockchain is to trust as the Internet is to information. It can be seen as the missing trust layer on Internet protocol. Trust is baked into the protocol using cryptographic technology such that not only information but also value (tangible or intangible assets like patents, property rights, ownership records, money etc.) can be transferred via the Internet. The key innovation in Blockchain technology is its ability to enable decentralized trustless transactions removing all the middlemen, also known as Trusted Third Parties (TTP). This phenomenon, namely, the notion of disintermediation and decentralization paves the way to radically transform all types of activities where business is conducted on a global basis. Because Bitcoin and money transfer is the first killer app of Blockchain, financial institutions come to mind first when trusted third parties are mentioned. However, Blockchain promises to make all kind of middlemen, also known as trusted third parties, to become obsolete. This is also inclusive of giant technology platforms like Google and Facebook. As trusted third parties, they keep and monetize consumers' personal data. Although consumers are get accustomed to this phenomenon, in principle, consumers' not really owning their personal data is unreasonable.

Like the original Internet, Blockchain has the potential to transform everything. Blockchain is expected to have far reaching effects on our economy and society. That's why it's not characterized merely as a disruptive technology that attacks a business model with a better solution and overtakes incumbents firms quickly. But rather, Blockchain is a

foundational technology; one having the potential to create new foundations for economic and social systems (Iansiti, et. al, 2017). With Blockchain many barriers including technological, organizational, and even societal are expected to become obsolete. Blockchain is such a foundational technology that it has the potential to create new foundations for economic and social systems (Iansiti et. al, 2017). Therefore, Blockchain is set to transform dozens of industries in the upcoming decade, pretty much the same way the Internet did to communications industry. In sum, Blockchain aims at replacing networks with markets where business of all kinds can be conducted in a trusted and transparent manner.

More or less, there is some degree of distrust when we conduct business in our daily life even with our closest acquaintances. Blockchain technology tackles this issue by providing an infrastructure for untrusted peers to securely transact with their counterparts by relying on cryptographically secured peer-to-peer distributed immutable ledgers, eliminating all intermediaries. Blockchain ensures transparency and traceability of all activities by everyone in the network. In short, as opposed to a system that advises not to be evil, Blockchain ensures a can't-be-evil system.

1.1 Erosion of Trust to Marketers

Recent research pinpoint that trust to marketers is at all time low level. The steady decline on the level of trust to marketers has come to such a point that only less than 20 percent of consumers have considerable or high level of trust to brands (Gallup, 2012). Likewise, C-level executives are found to be the least credible information sources (Edelman, 2017). Disappointingly, lack of trust negatively affect corporate reputation and hence brand image. Confirming this trend, a recent survey revealed that lying or misinterpreting facts about a product or service and intentional wrongdoing by corporate leaders were found to be top two factors that negatively impact corporate reputation (Edelman, 2017).

In the pre-blockchain world, trust in transactions derived from individuals, intermediaries, or other organizations acting with integrity. Let alone integrity, in online commerce, we can't even know who our counterparties are. Therefore, it is intermediaries that undertake the functions such as maintaining records, performing transaction logic to empower online commerce. Visa, PayPal, eBay and Google are examples to such intermediaries, which harvest much of the value.

2. Defining Blockchain Technology

The Blockchain technology combines cryptographic technology and peer-to-peer computing to deliver secure and direct, transactions without intermediaries. Seebacher et al. (2017) define Blockchain as a distributed database known as ledger, which is shared among and agreed upon a peer-to-peer network.

Distributed ledger is the main concept behind Blockchain technology. Every node in a Blockchain network executes and records the same transactions, which are grouped into blocks. Only one block can be added at a time, and every block contains a mathematical proof that verifies that it follows in sequence from the previous block. The data is time-stamped and highly tamper-proof once written, becoming more secure as time progresses and more "blocks" of data are cryptographically linked and added to the "chain". Zhu et. al (2016) mention that distributed ledgers serve as a database which offers "data security, transparency and integrity, anti-tampering and anti-forgery, high efficiency, low cost". Blockchain technology can be regarded as a brand new way of authenticating assets used in a transaction and can be potentially applied in numerous business activities. At its heart, it is all about the shift of trust from intermediaries into fully transparent processes.

2.1. Evolution of Blockchain Technology

Swan (2015) defines evolution of Blockchain technology in three distinct phases. According to this distinction, Blockchain 1.0 refers to currency transfer over Blockchain network. Bitcoin is the killer application of Blockchain 1.0.

Blockchain 2.0 refers to addition of programming logic known as Smart Contracts inside cryptographically secured blocks in Blockchain. Smart contracts are contracts that can be programmed directly onto the Blockchain and automatically executed as terms are met. In short, smart contracts enable programming trust in business transactions. As a result, complex multi-party transactions can also take place without any intermediaries. There are numerous areas of application for smart contracts including supply chain integration, smart properties (Blockchain enhanced Internet of Things), mortgages, titles etc. where business logic can be embedded.

Blockchain 3.0 refers to digital applications beyond finance and markets. Blockchain 3.0 application areas include government, smart cities, health records, education, science etc.

2.2 Key Terms in Blockchain Technology

1.Decentralization

Perhaps, the most noteworthy characteristic of Blockchain technology is its decentralized nature. Evans (2014) define Blockchain shortly as a public decentralized ledger. Blockchain's decentralized nature comes from its peer-to-peer network structure coupled with cryptographically secured technology and consensus driven mechanism. Consensus driven mechanism allows all parties to agree upon the state of data. This enables Blockchain eliminate the need to all kinds of intermediaries. In such decentralized systems, no one party controls the system and data exists in multiple places. Centralization brings order. Decentralization, on the other hand, brings about more robust, efficient, secure and flexible systems (Davidson et. al, 2016)

2.Privacy

Blockchain promises to respect consumers' privacy by giving them the right to control their personal data thereby preserving their identities from being monetized by third parties. Blockchain enables users to cover their identities by pseudonymity. Pseudonymity allows users to remain anonymous to the other parties in conducting transactions while providing their proof of identity on the protocol level. (Iansiti et. al, 2017)

3.Reliability

The peculiar characteristic of Blockchain that makes it reliable is that it keeps a shared, single reality of data across multiple locations across a network. As such, when a network node goes down, the system is not affected by this failure. This nature of Blockchain makes it much more reliable than any trusted centralized institution.

4.Immutability

Blockchain is, by nature, immutable in that, when a new block is appended to the chain, no one can alter the data (Cucurull et. al, 2016). This is also called irreversibility of records; because blocks are chronologically linked to each other and available to all the nodes in the network, the records cannot be changed making the system more tamper-proof.

5.Programmability with Smart Contracts

With Blockchain 2.0, not only data, but also programming logic can be securely kept and be autonomously executed as terms are met with predefined rules using smart contracts. In eliminating intermediaries, smart contracts are an essential and unique functionality of the Blockchain. It has implications on numerous areas including settlements, supply chain integration, law, finance and markets. For example, currently two third of Deloitte's revenue comes from auditing. However, in Blockchain, eliminating the need for all intermediaries is also inclusive of

auditing and settlement functions. Smart contract concept can be extended to form decentralized autonomous organizations (DAOs) or decentralized autonomous corporations (DACs) in which decentralized network of autonomous agents perform tasks to run a corporation without any human involvement using a set of predefined rules (Swan, 2015).

6. Trust Enabling

Coupled with the other attributes, Blockchain's foremost characteristic is its trust-enabling nature. Seebacher et.al (2017) state that trust in business context is the expectation that counterparty behaves according to four principles of integrity; namely, honesty, consideration, accountability and transparency.

Honesty is critical in building lasting relationships with all stakeholders of the brand in a truthful manner, without lying through omission or obfuscation through complexity.

Consideration refers to both parties' having good faith in business transaction by respecting to other party's interests and concerns.

Accountability refers to making and honoring commitments made to stakeholders of the brand. It involves not putting the blame to others and owning it when it requires. A term closely related to accountability is traceability.

Traceability, also known as *provenance* is the ability to identify and verify the components and chronology of events in all steps of a process chain (Skilton et. al, 2009).

Transparency refers to the extent to which information is readily available to both parties and also to others (Awaysheh et. al, 2010). Consequently, Blockchain achieves trust via the shared transparency it provides on transactions, the integrity of data present within the system, and the system's immutable architecture (Seebacher et.al, 2017). All new verified and approved transactions are publicly broadcasted throughout the network, allowing users to interact directly with each other, without the presence of intermediaries (Beck et. al., 2016; Sun, et. al, 2016).

3. Implications of Blockchain Technology on Marketing

Having discussed the related terms, the remainder of this paper studies the implications of Blockchain technology on marketing practices.

3.1. Removing Uncertainties by Ensuring Transparency and Trust

Trust issue is the biggest challenge in today's marketing environment. It becomes particularly important in e-commerce setting. This is because of the fact that not being able to fully trust to the other party hinders the ability to

conduct much more business than it can be currently done via online medium. As a consequence, despite substantial efforts, e-commerce adoption rate remains limited. As trust is crucial in online medium, Blockchain technology is set to tackle this problem by resolving uncertainty (that leads to distrust) at different levels. These uncertainties and Blockchain's unique perspective to deal with are detailed below;

1. Uncertainty About Who The Counterparty Is

Whether offline or online, individuals have some degree of uncertainty when making business transaction with others. Having witnessed to previous bad experience, consumers tend to mitigate the associated risks by avoiding making business with not-acquainted counterparts. This fact greatly limits the possibility to make business over Internet because of uncertainties posed by Internet medium. Well-known brands like eBay and Amazon serve as trusted third parties that consumers can rely on. Having acquired consumers' trust, in the long run, they gain the power to lock consumers into their platforms. Because, a platform like eBay gradually accumulates one's reputation score which serves as some sort of credibility. As a result, consumers become reluctant to switch to other platforms thereby, making the platform gain power. However, in reality, one's data like credibility or reputation score is and should be owned by oneself. That is, that data should also be transferrable by the consumers to other platforms, hence lowering switching barriers. In fact, Blockchain enables a notion like global credibility score which could be used by all parties that has potential to transact with someone.

Another risk that falls into this category is the risk of counterparty's declared identity to be fake. Blockchain eliminates this risk by applying pseudonymity; one's showing their proof-of-identity on protocol level (Iansiti et. al, 2017).

Yet another risk posed in e-commerce environment is that many forum sites lacks credibility. A big portion of the content is believed to be fake because some parties intentionally try to manipulate consumer perception in a negative or positive way about the businesses. With a Blockchain based solution, with proof of identity, the system is able to trace and validate the real identity and hence credibility of the content creator

2. Uncertainty in Asset Tracking Across The Supply Chain

When two parties have initiated a transaction, asset tracking is an issue where uncertainty problems might arise across the supply chain. With a single global network viewpoint, Blockchain distributed ledgers serve as agreed upon reality among non-trusted parties. In this regard, transparent and real time monitoring of assets eliminate any uncertainties.

3. Uncertainty About Brand Promises

Uncertainty about brand promises is reduced by Blockchain in two dimensions, in strategic dimension, ensuring brand operates as promised and in visibility dimension achieving full transparency and traceability to the consumers.

Ensuring That Brands Keep Their Promises

In the modern marketing environment, consumers increasingly demand more integrity and transparent business practices from brands. This can be attributed to the brands' reluctance of acting with integrity and responsibly especially in the past decades. Recent emission scandal of German automobile giant,

Volkswagen can be given as a well-known example to such deceptive manipulation practices (Siano et. al, 2017). The global erosion of trust to marketers can be reconstructed with a perspective that stops relying on human beings altogether and start building up a system that relies on fully automated processes instead. As exemplified with Distributed Autonomous Organizations (DAOs) on top of Blockchain, such automated systems makes human intervention, and as such breach from declared principles of conduct, impossible to happen. DAOs serve as a backbone for robotic process automation and artificial intelligence based systems of the future (Swan, 2015).

Transparency and Traceability by Consumers

Blockchain also enables full transparency and traceability of the brand promises. For instance, in marketing 3.0 orientation, brands claim to be socially responsible, be it sincere or not (Kotler et. al, 2010). In this regard, with Blockchain, consumers will be able to instantly check the brands' fund given to charities, check to what extent the brand is socially or environmentally responsible. Ingredients of product of a brand could be irrefutably traced to see, for example, whether the product is really organic as stated. Furthermore, consumers' will be able to see whether the brand they prefer employs workers under acceptable conditions (i.e. no child workers). A Blockchain based business, Everledger tracks the provenance of individual diamonds from mining stage to the very final stage, even tracing the previous owners.

Other transparent measures consumers will be able to see indisputably include; customer complaint rates, customer satisfaction score, product defect rates, on time delivery rates. In short, claims without verifiable proof will remain as just claims. Instead of those blanket statements, brands need to prove their claims with backed data. Tapscott (2016), mentions that, in the past in the past, brands' success depended on dressing. However, today, success depends on to what extent a brand undresses. Additionally, for authentic and genuine brands, Blockchain also serves as a means for counterfeit detection and hence brand protection.

4. Uncertainty When Things Go Wrong

One of the fundamental reasons to have a trusted third party is to handle the situation when unexpected events happen. Using smart contracts, Blockchain also takes the role of trusted third parties to handle the settlement process. It does so by binding all parties to an undeniable programmable contract, that is; smart contract that involves if-then-else declarations. The smart contracts unfold and self-execute as events occur, hence coordinating and settling all the possibilities that can happen in a business transaction. For example, when one party in a business transaction doesn't deliver the product as declared, the payment of the other party is automatically rolled back.

3.2. Personal Identity Ownership

3.2.1. Attention Economy and Technology Addiction

The current digital ecosystem is characterized as attention economy (Davenport & Beck, 2001). Started from the early years of Internet revolution, consumers prefer not to pay money in exchange for using digital platforms such as search engines, social media and video sharing platforms. They do, however, pay their attention to those platforms. In contrast to the explosion of data coming from everywhere, including social media platforms and data coming from Internet of Things devices, consumers' time and attention is static, 24 hours a day, and doesn't increase any more. This makes consumers' attention scarcer and thus valuable. As consumers' personal data becomes richer coming from various sources, it becomes beneficial to monetize valuable consumer data by profiling and trading to advertisers. Using consumer data, personalization engines and artificial intelligence, consumers are analyzed at individual level and targeted with fine-tuned offers that they cannot refuse. Psychologists had significant discoveries on how human brain works (Ertemel, 2018). By exploiting these techniques, technology platforms design product experiences that capture attention and result in more addictive usage, hence technology addiction (Eyal, 2014; Ertemel, 2016; Ertemel, 2017). As a result, attention economy puts consumers in an infinite loop where they fall victim to those technology platforms.

3.2.2. Blockchain and Pseudonymity as a Cure for Attention Economy

Blockchain can serve as a cure for this harmful loop by giving the ownership of consumers to consumers themselves. Using pseudonymity feature of Blockchain, consumers can store their own data in their own cryptographically secured wallet or smartphone and show their proof-of-identity on the protocol level and choose to remain anonymous to any other third party. Any data with another party can be shared on a need-to-know basis. Hence, consumers have complete control over their data, even be able to track who did what with their data. This concept, also known as self-sovereign-identity is realized by Blockchain based projects like uPort. For instance, if a third party needs to know whether a customer is at legitimate age to use their product, only that information, yes/no response to being legitimate inquiry is given to the third party, instead of revealing the customer's birthday.

This complete ownership of personal data opens up many possibilities. First and foremost, digital platform giants like Google and Facebook will no longer be able to monetize user data. In the traditional scenario, when consumers enter a not-so-familiar web site in digital medium, they choose to 'Facebook Login' or 'Google Login' to mitigate the risks and uncertainties associated with sharing their sensitive information with the untrusted party. This comes at the expense of sharing sensitive personal data with those trusted parties like Facebook and Google. However, with Blockchain, there is not any need to share personal data with any third party including those platforms. Instead of platforms' monetization of attention, consumers, themselves, can monetize that attention. Blockchain based Basic Attention Token (BAT) does exactly this; it rewards consumers for attention given to advertisements with BAT crypto-currency. In order to track consumer attention, an Internet browser (brave) has been developed.

3.3 True Disintermediation

With the advent of the Internet, consumers at large were impressed with disintermediation made possible with e-commerce. Disintermediation can be defined as the replacement of traditional trading mechanisms with alternate trading made possible with electronic intermediaries (Stanton, 1999). Internet has brought about *electronic brokerage effect* implying that as search costs are negligible on Internet, those intermediaries are not needed any more. (Malone et. al, 1987)

However, new intermediaries have started to take place fulfilling the need to have a trusted third party. This new function, called re-intermediation involves providing a value add to the value chain by through e-commerce capabilities like information brokering, trust provision and search capabilities (Bakos, 1998; Sarkar, 1995)

As previously stated in discussion of resolving of uncertainties, Blockchain eliminates the need for centralized institutions for trust enforcement. This is also inclusive of transacting parties' reputation scores, credibility etc. As a consequence, true disintermediation, rather than re-intermediation is expected to happen. Furthermore, it will be possible for consumers to use a specific service from one brand and use remaining services from another. For instance, a bank customer might choose to migrate to digital wallet service of another bank and remain to use other services from his original bank. Such a migration could happen in several minutes. As brands' switching barriers disappear, the only way to differentiate for the brands is going to be by providing seamless customer experiences.

3.4. Co-Creation and Monetization of Value by Customers

Traditionally, when new businesses start to gain traction in a two-sided market, they face a challenge achieving network effects. In network effects, as the number of nodes increase, the total value of the network increases as in the case of email, Whatsapp, Skype etc. However, reaching the critical mass is fairly difficult, hence building an enormous barrier to new entrants. For instance, when the number of sellers is relatively low, buyers become reluctant to use the network and vice versa.

3.4.1. Network Ownership Effect

Blockchain technology has the potential to democratize starting a new business by coining a new concept, network ownership effects also known as token network effects (Dixon, 2017). It does so by incentivizing all the stakeholders

of a project by rewarding for engagement to the network. Catalini et. al (2016) explain this by stating that, relative to open source projects that rely on donations of time and resources, Blockchain based projects offer direct, monetary incentives.

As opposed to network effects, in network ownership effects, the ownership of the network is distributed to participants of the ecosystem using tokenization.

Utility consumers get from joining the network is not the only gain they receive. Participants who need to own project tokens also gain by the increase in token price. When project is in its infancy, those who believe in the project's story are inclined to buy its tokens while the price is cheap. As they own more tokens, they evangelize the project to others. As such, in the beginning ownership of the network by participants is the key driver for the network to gain momentum.

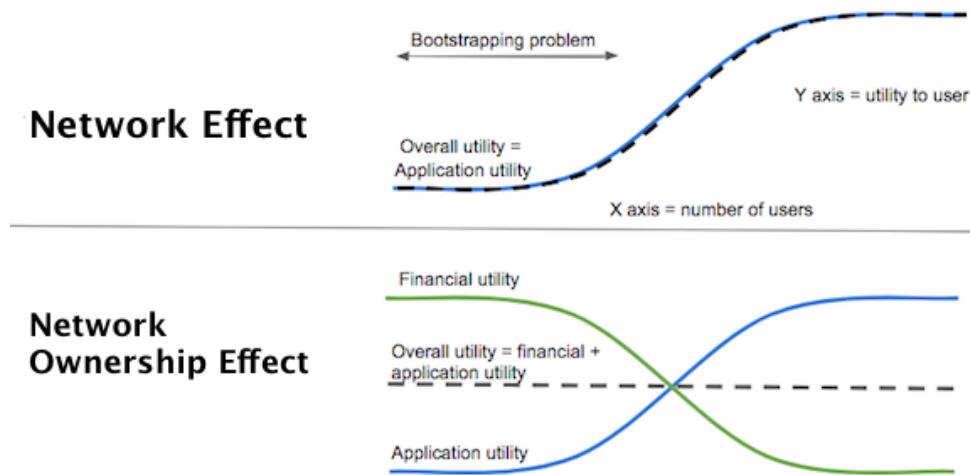


Figure 1: Network Ownership Effect (adapted from Dixon, C. (2017))

After reaching the critical mass, network effects take place. Naturally, at this point, token price increase and stabilize. As a Blockchain based competitor to Uber, La'Zooz project is an example to this phenomenon. Drivers are paid with Zooz tokens in the network. At the beginning, drivers do not differentiate between accepting fiat currency or Zooz token. Gradually, as they collect more tokens and believe themselves as part the project, they start to evangelize the project to other drivers with a motivation to have financial gain.

There are many Blockchain based projects that employ complex mechanisms to incentivize all the stakeholders in the network. Pazaitis et. al (2017) describe such systems as decentralized cooperation systems.

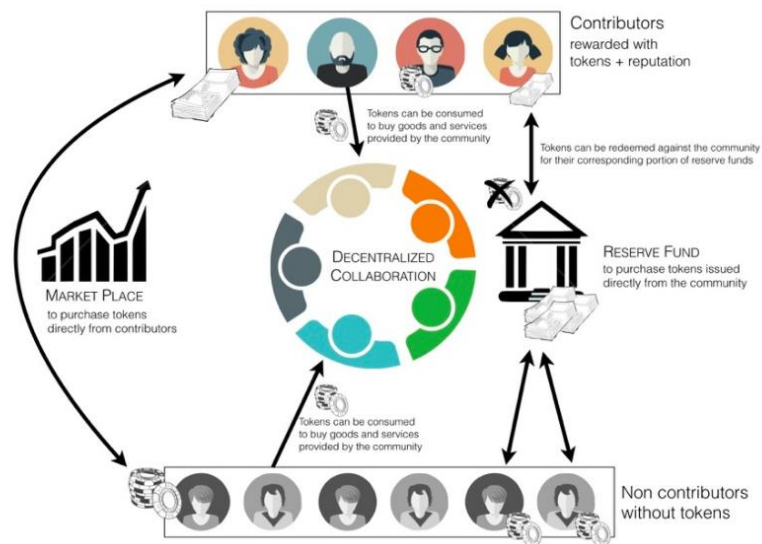


Figure 2: Decentralized Cooperation (Adapted from Pazaitis et al. 2017)

In such systems, contributors and non-contributors earn and trade tokens to buy goods and services served by the community. As an example, Blockchain based social media platform, Steemit, rewards content creators and content curators with steem tokens. Token earners can redeem their tokens in the marketplace. Those who believe in the project collect steem tokens. The key to success in network ownership effects is making the audiences believe in the brand's story and make them willing to be part of the story. Consumers, especially younger generations tend to gather around specific causes they care about and are willing to actively participate by forming dynamic communities. As such, for brands to succeed in this age, in addition to a good gamification (mechanism) design, cause related marketing and storytelling is going to be among key marketing strategies (Ertemel, 2017; Ertemel, 2016). We can see the effects of these strategies on Steemit project. The project has spent no marketing budget; instead, community members themselves authored a free e-book entitled Steemit 101. The community self-organized an international festival – SteemFest and even paid to advertise on billboard in Chicago, US. Furthermore, the Steemit community created a 3rd party ecosystem for alternative interfaces and analytical tools to create a richer social media experience (Bruckhman, 2016).

In short, as opposed to VC-backed ownership, decentralized ownership of brands by global community of enthusiastic micro-shareholders create network ownership effects and can provide everything needed for the brands to succeed.

3.5. Democratization of Supply and Cost Reduction

Another way value can be co-created in Blockchain is the state in which customers take the role of suppliers. Undoubtedly, the ultimate form of collaborative economy is when old customers become new competitors. For example, decentralized cloud based storage initiatives on Blockchain technology like Storj and Filecoin aim at democratizing the storage business by letting everyone with idle storage capacity to share their unused disk space and become suppliers. Participants who share their disk capacity get monetary rewards with tokens. Instead of relying on monopolies like Amazon.com, democratization of supply is expected to lead to 90 percent decrease in cloud storage prices (Epstein, 2017).

Catalini and Gans (2016), Blockchain allows market participants to perform costless verification, and thereby it lowers the costs of auditing transaction information. Thus it makes it efficient to make transactions in the market-places where it would previously have been inefficient due to low the transaction value compared to the transaction

costs. An example of this are different sharing economy platforms that require a verification of trust and mechanisms to monitor reputation and payment systems.

3.5.1.Future Directions

Next decade is expected to witness a breakthrough in Blockchain and Artificial Intelligence technologies, known together as smart networks (Swan, 2016). More or less, society at large and marketers and businesses in particular are expected to be affected seriously by these technologies. As those technologies, coupled with robotic automation are expected to transform the whole society, making mass digitization come true, uncertainties that stem from traditional structures relying on human beings need to be resolved. Moreover, in internet of things vision, billions of smart things are to sense, respond and communicate with each other and human beings. This mandates that machines be able to trust to humans. But trust will be mandated on protocol level. Therefore we will need to eventually migrate from don't be evil system to can't be evil system.

3.5.2.Drawbacks of Blockchain Technology

Blockchain technology is still in its infancy and faces scalability problems. We need to wait at least for several years till the technology is matured enough to be production-ready scalable. On the other hand, not all Blockchain based initiatives are necessarily decentralized. Fairly centralized projects can also be designed and implemented on top of Blockchain technology making central authorities even more powerful. This aspect deserves caution when assessing Blockchain based projects.

4. Conclusion

IETT Blockchain brings about new promises and new threats to marketers. The modern marketing environment evolves such that customers are not merely on consumption side any more. Instead, they can take the role of value creators. Moreover, they can even take the role of brand ambassadors as a result of network ownership effects. In order to unleash this potential, brands have to change their perspective and adopt new strategies like designing gamification mechanism that rewards all participants for their engagement in the ecosystem.

On the other hand, with Blockchain, marketers face new challenges. Customer data is envisioned to be owned by customers themselves making brand behavior easier than ever. Seamless customer experience is the only key to differentiate for the marketers. All in all, brands have to appeal to audiences with their story and cause in order to succeed. This is the only way to make consumers unite and build up communities they care for and actively participate. On technological level, Blockchain enables these concepts to come true.

Blockchain is still in its infancy and it will take some time until we see Blockchain based projects on the mainstream. However, Blockchain technology has a lot of serious implications for marketers that need to be studied from now on.

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