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FIVE WAYS TO CREATE CUSTOMER VALUES WITH BLOCKCHAIN

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Abstract

This study focuses on the blockchain technology and its roles in creating customer values. We first clearly conceptualize how blockchain creates strategic business values by building a highly "decentralization-oriented" or "asset transfer-oriented" network service system. Then, we analyze the five ways that blockchain is applied to marketing innovation and propose a research framework for blockchain to create customer values. Those five ways include "protection of privacy", "reward of attention", "security of supply chain", "agreement of autonomous transactions", and "observation of corporate social responsibility". We also present some related propositions and finally provide some research directions that will guide future blockchain-relate research in marketing innovation.

Key words: blockchain; customer values; decentralization; asset transfer; marketing strategy

Introduction

Now is a data-driven business world. With the assistance of new-age technology, marketers can get more in-depth and comprehensive data to understand customers. They also enable marketing strategies to target the market more accurately (Kumar, et al., 2020). Furthermore, thanks to internet technology, customers have more channels than before to express their views on a company or brand, and are accustomed to the digital buying experiences so as to enjoy many diversified options to interact with a firm. Nevertheless, customers increasingly urge marketers to ensure the security of on-line payments and the protection of personal privacy. It prompted marketers to find ways to provide a

peace-of-mind to customers whenever they engage with a firm through the internet. As a result, firms must rely more on new-age technology, such as blockchain, artificial intelligence, and machine learning to develop effectual solutions.

Among all the recent appliances, blockchain is considered one of the most disruptive and innovative information technologies since the emergence of the internet. It is a technology for a decentralized database that makes the backbone of an open, distributed ledger. The database is constructed in a way to be maintained by all participants connected within the ledger. It operates on real-time bases with reliable data, and no single user controls or dominates the process. Any modification or update of the chain must be accordance to a strict protocol. Because the blockchain combines the power of all participants on the internet to ensure its security, it is vividly described as "the trust machine" (The Economist, 2015).

Based on the technical features of the blockchain, the practical applications derived from it are expected to have a significant impact on the current economic, legal, and political systems (see Casino, et al., 2019; Goose, 2018; Lansiti & Lakhani, 2017; Swan,2015). For example, Australia, China, Germany, India, Singapore and United States have all issued policy papers or guidance manuals on the development of blockchain (Australian Government, 2020; CAICT, 2019; Germany Federal Government, 2019; India, 2020; Singapore, 2019; CFTC, 2018). At the same time, start-ups are also competing to develop practical applications of blockchain (Carson, et al.,2018). Kumar (2018) proposed that in the next 20 years, the marketing research must focus on "transformative marketing" and actively investigate the significant impact of technology. Among them, the blockchain, pointed out by Kumar, is one of the main technologies that will cause the transformation.

So far, there were several academic papers focusing on exploring the benefits of blockchain for marketing and brand strategy. Rejeb, et al. (2020) suggested that blockchain is playing the role of incremental innovation, practicing a customer-centric business model. Ghose (2018) and Harvey, et al. (2018) argued that blockchain breaks through the limitations of "authenticity" and provides accurate, credible, and transparent data, enabling companies to build better customer relationships than before. Min (2019) and Montecchi, et al. (2019) proposed that blockchain can reduce the risk of uncertainty and enhance supply chain resilience due to the traceability in production within a supply chain management system. Kumar, et al. (2020) believed that blockchain is a security-oriented technology that has the potential to protect data and processes, allowing customers to have control over their privacy.

From the innovation diffusion perspective, however, it might be a good time to explore how blockchain can actually create specific value. The de-

velopment of blockchain is no longer in an early stage epitomized by the application of cryptocurrencies such as Bitcoin and ICO (Initial Coin Offering). It has entered a period of growth. Moreover, the emergence of related application platforms such as Ethereum has also lowered the technical threshold of blockchain. Nowadays, the practical application of blockchain has occurred in a variety of industries. The applications always bring about significant changes to traditional business activities. Consequently, the innovative commercial values have attracted much attention in all walks of life (e.g., Bumblauskas, et al., 2020; Kumar A., et al., 2020; Boukis, 2019; Casino, et al., 2019; Crosby, et al., 2016).

Thus, it is imperative to have a deeper understanding of how firms apply the technical features of blockchain to create customer values. This paper takes a dynamic view of blockchain development and discuss practical business use cases in which blockchain has created values for the customer. The purpose of our work is to construct a research framework to enrich blockchain studies in marketing innovation.

The organization of this paper is as follows. First, we introduce the technical architecture and features of blockchain; secondly, we discuss and conceptualize the possible strategic business values of the blockchain; then, at the level of business applications and problem solving, we discuss how the blockchain affects marketing innovation and what kind of customer values it can create. Finally, we present a research framework and provide some suggestions for future research.

Technical Features of Blockchain

Blockchain is a continuous sequence of related data blocks generated using cryptography. Each block contains information about transactions across the network within a period of time, which is used to verify the validity of its data and generate the next block (Casino, et al.,2019; Min, 2019; Gupta, 2017). The blockchain architecture is shown in Figure 1. First, Blockchain is a decentralized database “linked” (like a chain) by a sequence of “data blocks”. In this blockchain system, every period of time (maybe ten minutes or one second), the system will compile and encrypt all transaction information during this period of time, and then compress it into a data block, and stamp this block with a timestamp to record the time when the transaction is completed. Then, according to the order of time, it is connected with the previous block. The calculation and verification of the block are handed over to the computer that downloads the application of the blockchain, and the volunteers who provide the computing power of these computers are called “Miners”.

Secondly, the blockchain is a distributed ledger technology. A single data block can be imagined as one spreadsheet, then a blockchain is a general ledger and is open to everyone (miners) to participate in accounting. A

Figure 1. Architecture of Blockchain

Hash: hash value, a technique used in data encoding to ensure the uniqueness of a block and the concatenation with the previous block.

Timestamp: the timestamp is the time when the transaction was packaged and added to the block by the miner to confirm the specific time when each work was completed

Nonce: this is a random variable used to determine whether the verification of a block is completed

Transaction counter (TX_1, TX_2…TX_n) : the number of transactions is the verified transfer or mining record, which can provide proof of commercial transactions verified by members.

blockchain system is a network composed of many nodes, and a node is a computer on the internet. Each node can participate in the update of the blockchain database, while competing for accounting. The system will select a node with the best work quality, and it will be responsible for accounting task during this period of time. When it successfully creates the latest spreadsheet (data block), the node will send this block to other nodes, and the other nodes will verify and approve the information on this block.

Finally, each node holds the latest, same, and complete ledger. Because each node has the same general ledger, it is difficult for someone to tamper with the transaction records on the ledger. This not only avoids cooking the books, but also makes the information in the ledgers transparent and public. In terms of the above working principle and process design, the blockchain has at least

three technical features, namely, distributed, encrypted and public (Tapscott & Tapscott, 2017).

"Distributed" means that the blockchain system is composed of miners scattered all over the world, volunteering to provide personal computers to participate in accounting activities. Every node has the same rights and obligations, there is no need to rely on a data center, and there is no central authority. "Encrypted" refers to the use of a strong cryptographic algorithm, which largely avoids hackers' intrusion to protect the security of the blockchain. And data storage, recording and update within the blockchain have to follow the rules established by the algorithm. These transactions also require verification, authentication, and approval by each user. "Public" means that everyone can access all information on the blockchain at any time. Based on the technical characteristics of dissemination and encryption, it is difficult for users to make changes to the blockchain. Therefore, transactions on the blockchain system have significantly reduced the need for a third party to serve as credit guarantor.

In theory, with the help of the above technical features, transactions on the blockchain system may not require additional "trust" mechanisms; the process itself has extremely high security.

Strategic Business Values for Block-Chain

McKinsey has analyzed nearly 100 blockchain application cases and addressed two major needs, namely "record keeping" and "transactions" (Carson, et al.,2018). From McKinsey's report, we have observed that the need for "record keeping" is towards the applications of blockchain's features of decentralization, distributed database, and unchangeable records. Practical application cases include supply chain security, identity authentication, and smart contract. The need for "transactions" focuses on the applications of peer-to-peer network, asset digitization, and asset (or currency) transfer, such as cross-border payments, insurance claims, and ICO.

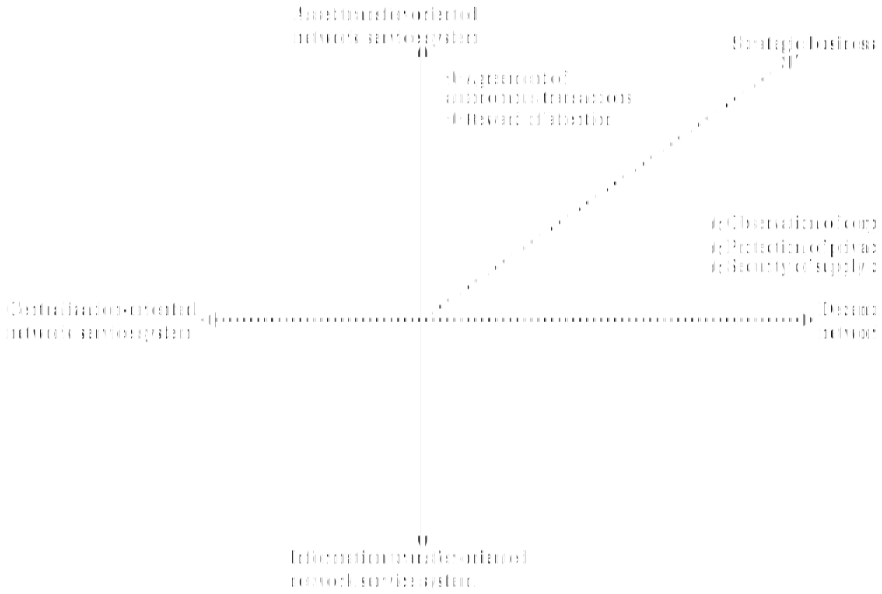
Integrating McKinsey's report and the underlying technical features of the blockchain, we suggest that blockchain can create at least two strategic business values. First, blockchain technology changes the nature of the internet that only performs information exchanges. It allows participants in a transaction to directly and safely exchange assets or currencies through the network service system (Swan, 2018 & 2017; Beck, et al., 2017; Notheisen, et al., 2017).

Secondly, it changes the traditional transaction process. The current social and commercial systems are accustomed to relying on specific operating centers or intermediaries to provide "trust" to guarantee transactions. For example, government agencies, lawyers, banks, etc. are used to ensure the execution of contracts, while keeping relevant records. However, a transaction system using blockchain technology can eliminate the need for middlemen; that is, it can safely complete important tasks such as verifi-

cation, approval, and storage, which not only greatly reduces transaction costs, but also makes the transaction process more transparent than before (Tapscott & Tapscott，2017; Swan, 2015).

Therefore, when firms decide whether to invest in blockchain technology, they can evaluate the following two strategic opportunities. First, the higher the extent to which the "decentralization" of the network service system is, the more unique values can be created; secondly, the higher the extent to which the "asset transfer" of the network service system is, the more unique values can be created. Accordingly, the strategic business values for blockchain are depicted in Figure 2.

Figure 2. Strategic Business Values For Blockchain



When the strategic opportunity is in the upper right quadrant of Figure 2, whether it's entirely an online or a combination of online-offline business model, firms should consider how to apply blockchain to satisfy customer needs for specific services whereas creating unique customer values under their own market positioning. We thus propose:

RP1: The higher the extent to which a company applies blockchain technology to build a "decentralization-oriented" network service system is, the more unique values it can create.

RP2: The higher the extent to which a company applies blockchain tech-

nology to build an "asset transfer-oriented" network service system is, the more unique values it can create.

"Decentralization" refers to the use of blockchain technology to lessen the involvement of a centralized hub or a third-party verification agency that would hold too much data and have the ability to manipulate information gaps. "Asset" refers to the property rights or certain claims in the form of tokens. It is the ownership of a digital right or unit created by the blockchain, which must be linked to physical assets or specific rights.

How Do Blockchain Technology Create Customer Value?

Some professional practitioners predicted early on that blockchain had the potential for disruptive innovation in marketing strategies (Williams, 2018; Connick, 2017; Newman, 2017). Based on technical features and practical applications, we suggest that blockchain could create values through five ways including "protection of privacy", "reward of attention", "security of supply chain", "agreement of autonomous transactions", and "observation of corporate social responsibility" (see Fig 2).

Protection of Privacy

In comparison with the current internet technology, blockchain provides consumers with more secure and reliable privacy protection when engaging online transactions (Jesus et. al, 2018). When customers authorize firms to use private information, such as interests, health, purchasing plans, etc., they can use the unchangeable transaction records on the blockchain to reverse-check the application of their private information throughout marketing activities (Williams, 2018; Tapscott & Tapscott, 2016). Firms can further use blockchain to design some kind of compensation mechanism to allow customers to more willingly provide private information.

With that, stipulations such as customer privacy authorization and feedback can be written into a blockchain first. Moreover, firms can issue tokens for a blockchain as a substantive reward to customers who authorize the use of personal information, allowing customers to exchange these tokens for merchandise or other transactions. Thus, we expect that when a firm allows customers to choose a safer and more effective way to exchange for privacy, it should be able to enhance customers' brand loyalty (Travizano et al., 2018; Williams, 2018).

Take Facebook as an example. It is a social platform with the most users in the world. Its business model is to let people enjoy free social network services, but at the expense of user privacy. Recently, Facebook has frequently abused user information, which resulted a significant loss of its corporate reputation and a rapid user escape. Hence Zuckerberg announced the refreshed corporate visions for the next ten years, one of which is to build Facebook into "A New Private Social Platform" that

emphasizes privacy-preserving (Zuckerberg, 2020).

Facebook established a blockchain unit in 2018, then acquired the blockchain startup ChainSpace in 2019, and ventured to launch the LIBRA cryptocurrency plan. Based on Zuckerberg's several public speeches (Thompson, 2019; Zuckerberg, 2019), he mentioned that Facebook will use encryption, peer-to-peer, decentralization and other technologies to build a digital social space with enhanced privacy-protection in order for users to enjoy more intimate community relationships. Accordingly, we postulated that Facebook is implementing a new business model with blockchain technology to recreate values for users and enhance the brand loyalty. We therefore propose:

RP 3: Blockchain helps to create the value of "privacy protection" to customers.

Reward of Attention

Blockchain allows firms to directly draw or purchase consumer attention without going through advertising agencies. Moreover, relying on the interactive mechanism designed by the blockchain, firms can directly pay to those who have watched the targeted advertisements (Newman, 2017). In other words, firms could use blockchain technology to directly connect with target audiences, which not only eliminates middlemen and reduces agency costs, but also effectively validates marketing communications.

To the prevention of digital advertising fraud, blockchain provides extraordinarily high hopes (Harvey, et al., 2018; Internet Advertising Bureau, 2018). Due to the ecological complexity of digital advertising, dishonest conducts, such as fake websites or click fraud, appeared here and there. In 2016, it was estimated that websites developers and advertising agencies cheated away at least 20% of a firm's advertising budget. As a result, P&G, being one of the largest advertising sponsors in the United States, cut its digital advertising budget by 200 million US dollars in 2017 (Cavale, 2017). P&G also requires advertising agents to provide more transparent data that would verify the number of the targeted audience who had seen the advertisement and how the budget was consumed.

Technology giants such as Google and Facebook who dominated the digital advertising market promise to continuously improve their algorithms to alleviate advertising fraud. They would also allow individual firms to effectively track advertising channels and its spread. Nevertheless, the traditional advertising process still requires the participation of many middlemen to instill the trusts among technology giants, content sites, agencies and advertisers. In addition, customers are increasingly reluctant to hand over their online footprints due to the awareness of privacy-protection. Customers don't want their personal information become a commodity to be sold in the advertising market. Fortunately, blockchain may provide some solutions to deal with all these conflicts

of interest among the various stakeholders.

For example, Brave browser (www.brave.com) applies the blockchain to construct a new business model, i.e., "attention economy". Brave uses Ethereum to issue Basic Attention Token (BAT). When consumers use Brave browser, they can choose either turning on a built-in ad blocker or watching the ads. When a consumer clicks on an advertisement in Brave, Brave will open another new web page to present the advertisement so that the consumer knows exactly what they are doing. Comparatively, the firm that put on the advertisement would have a way to confirm customers had indeed watched the advertisement.

As long as customers had watched the advertisement, they would receive 70% of the advertising budget as a reward for their attentive effort. Brave will transfer these rewards into BAT and then make a deposit into customers' Brave account. Customers can use BAT to pay content producers, i.e., internet celebrities, live broadcasters and bloggers. Brave's business model has won the support of some mainstream media; for example, the Washington Post cooperated with Brave to take BAT on its website (Harper, 2018).

"Attention" is a precious commodity in the eyes of advertising agencies. Customers, however, often cannot get rewarded for their attention. The application of blockchain provides customers with the opportunity to take back the ownership of their attention. Customers could only be passive receptors of advertisements in the past. They can be active players now and obtain revenues in the advertising market. We thus propose:

RP4: Blockchain helps to create the value of "attention reward" to customers.

Security of Supply Chain

The features of distributed ledgers and "chains" make blockchain a powerful monitoring tool to track the source of goods, the processes of manufacturing, and the route of transportation (Casino., et al., 2019; Min, 2019; Montecchi, et al., 2019). We can imagine that the blockchain is a special ledger that attached to a specific product. From the very beginning when the product is manufactured, a block is created to record all the production information. Each subsequent transaction record (e.g., from factories to warehouses to wholesalers to retailers) will form a new block respectively. Each is linked to the previous block so that it can finally create the structure of a traceable product block-chain (or supply chain).

Applying the traceability of blockchain can manage brand equity more effectively than before. First of all, it can lower the risk of purchasing counterfeit goods. Through the transparency and openness of supply chain information, customers can easily find out where the raw materials come from, where the product is made and how the delivery is conducted and so forth. Secondly, firms

can tell a distinctive "brand story" through the complete, reliable supply chain information, thereby strengthening the customer relationship management.

For example, De Beers, the world's renown diamond producer, guarantees the purity of their diamonds with the help of blockchain technology. De Beers also ensures through every transaction record that their diamonds are not from a "conflict zone" in addition to the quality of purity and authenticity (Lewis, 2018). From the very beginning of excavating, De Beers applies the blockchain to track the production of a diamond. Customers can check these records to ensure that the diamonds they purchased are not "blood diamonds". Nor the proceeds from those diamonds are used to fund a regional conflict. Consequently, De Beers is able to enhance customers' trust toward its brand.

The traceability of blockchain data could lower customers' perceived risk. Specifically, blockchain allows customers to obtain a complete knowledge of product's provenance to make purchasing decisions; the knowledge include product's origin, production and marketing control, product modification or impacts of the purchase (Montecchi, et al., 2019). Other than providing transparent information from the supply side, a supply chain using blockchain also allows customers to check the information directly by themselves. Therefore, the blockchain could enhance the security and credibility of a supply chain and create more added-value than before throughout the process of a purchase decision. Accordingly, we propose:

RP5: Blockchain helps to create the value of "supply chain security" to customers.

Agreement of Autonomous Transactions

The traceability of blockchain is also beneficial to the management of the transaction process, such as the initiation, execution, check, and settlement of commercial contracts. The resulting "smart contract" is now the most observant business application of blockchain (Iansiti & Lakhani, 2017; Tapscott, 2017; Tapscott & Tapscott, 2016). Since the business world is based on contracts, "smart contracts" will naturally affect existing social, legal, and political systems. In fact, the U.S. Commodity Futures Trading Commission (CFTC, 2019) issued "A Primer on Smart Contracts" document as a teaching material for financial technology innovation. It listed several applications such as the automatic execution of insurance claims, leasing services for bicycles and transactions for financial derivative products.

Basically, a smart contract is a program that runs on the blockchain. It is "an agreement in digital form that is self-executing and self-enforcing" (Werbach & Cornell, 2017: 31). Signing a contract is to solve a "trust" problem; it is necessary to rely on intermediaries at different levels in order to ensure the completion of the contract. A smart contract run on blockchain has a decentralized architecture. It would be able to re-

duce the transaction cost of the contract and improve security.

In addition, smart contracts can merge information flow and financial flow to process a transaction in real time. Technological contrivances such as encryption algorithms, built-in clearing mechanisms and time stamps of smart contracts can accurately fulfill financial responsibilities. They could also automatically make payments with hard currency or just transfer assets.

Take bicycle renting for an example. When a customer rents a bicycle with a credit card, the rental company must first confirm the validity of the customer account with a bank (information flow) before determining whether to approve the transaction. When the customer returns the bicycle, the company would check the rental time or cycling mileage (information flow), calculate the rental fee, and then charge the issuing bank. The bank then transfers money from the customer's account to the rental company (financial flow). The whole process could be executed with the help of smart contracts. When a customer rents a bicycle, a smart contract starts to obtain the customer's bank credit information and then automatically track the cycling speed and distance upon approval. When this customer returns the bike, the smart contract will come up with the rental fee immediately and automatically transfer the fee from this customer's bank account to the rental company. What's amazing is that the smart contract could also automatically check the rental company's customer loyalty program and deliver rewards or refunds directly to this customer.

A smart contract created with blockchain has the advantages of automation, real-time processing, encryption, etc. It could minimize contract disputes caused by human factors. Without burdened by all the transactional activities, a firm could focus on designing a better customer experience to enhance customer loyalty. We thus propose:

RP6: Blockchain helps to create the value of "autonomous transactions agreement" to customers.

Observation of Corporate Social Responsibility

Blockchain reduces information asymmetry between firms and stakeholders. A firm is able to exhibit its accountability transparently through the application of blockchain. The public can easily check a firm's integrity level (Venkatesh, et al., 2020; Williams, 2018; Tapscott & Tapscott, 2017). Because the blockchain can record every transaction and share it with all nodes in the network, it would allow stakeholders to verify these transactions in real time and seamlessly.

Taking charitable donations as an example. The flow and purpose of donations are what benefactors care about the most. In most circumstances, benefactors can hardly know the information immediately, nor can they verify the information truthfulness once they get it. Benefactors normally have to wait a long pe-

riod of time (months or years) before the beneficiaries disclose the relevant information. The benefactors, however, have no way to still verify the information. As a result, both "lack of transparency" and "inability to verify" have become the major shortcomings of charitable donations.

Blockchain can fill up the trust gap in charitable donations. For example, the charitable program of "Pink Care Token Project for Period Poverty - Helping Women in Need of Better Feminine Care" initiated by Blockchain Charity Foundation (BCF) has improved the transparency of philanthropy donation. BCF was founded by Binance which is currently the world's largest cryptocurrency exchange. This donation project originated from the following fact:

"*In Uganda, there are women who use cassava leaves as sanitary pads, leading to infections and general uncleanliness. In Nepal, some women even suffer from Chhaupadi (menstrual exile), a place where women are ostracized by their families and community when on their periods. They are also prevented from touching other people, livestock, or plants, as well as from sharing the same water source and walking certain paths. In extreme cases, some women are not even allowed to follow their regular diets. Aside from the psychological effect of this practice, it has negative impacts on the health, safety, education, and livelihood of women. ... While many foundations, NGOs, and corporations having worked on the period poverty problem over the years, there is tremendous inefficiency and lack of transparency in traditional ways of charitable giving that causes a loss of trust and high intermediary costs.*" （https://www.binance.charity/period-poverty）

The traditional donation process is that an overseas charity organization initiates fundraising and then remits the funds to Uganda. The charity organization purchases sanitary pads from local suppliers and then hires local institutions or personnel to confirm the needs of local women and distribute the pads. The process involves a lot of activities such as cross-border cash flow, logistics, and supervision. Apart from the exorbitant cost to complete the process, it is also pretty difficult to validify the appropriateness of donation using and the transparency of cash flow.

Now, BCF uses blockchain to propose an innovative solution. At the beginning, Binance issued the blockchain encrypted currency PCAT (Pink Care Token). The virtual currency, e.g., Bitcoin, donated by donors will first be exchanged for the equivalent PCAT. For each PCAT, young women who is eligible to receive donations can get one year's feminine hygiene products. From the practical perspective, BCF will be onsite to distribute PCAT to young women and assist them to open digital wallets for storing PCAT. They will be taught how to use PCAT to trade for feminine hygiene products with local

suppliers. Local suppliers can exchange their PCAT into local currency through the Binance Exchange. The cryptocurrency donated by the donors will eventually be sold by Binance Exchange and converted into local currency for local suppliers to cash in.

Of course, donors can check the amount of their donations converted into PCAT from the blockchain. Furthermore, donors can track which digital wallet (address) the PCAT is allocated to and when the PCAT is converted into physical objects. Since the address of the digital wallet is just a series of numbers on the blockchain, the identity of the young women who had received donations were unknown. In other words, the privacy of the young women is safely guarded. In short, blockchain helps BCF to achieve three goals, namely, transparency of cash flow, traceability of materials, and a lock-in for specific purposes.

Therefore, from the perspective of corporate social responsibility as a strategic asset (Litz, 1996), blockchain can assist stakeholders to independently verify corporate social responsibility activities. It makes a firm's efforts in social responsibility more transparent, thereby gaining positive ethical awareness from the public. Moreover, blockchain would be able to provide proactive, timely information feedback for specific social responsibility issues. Accordingly, social responsibility is no longer a description embedded quietly in the annual report. Customers don't have to wait till the end of a year and just get a vague result. In short, the blockchain enlivens corporate social responsibility and transforms it into intangible assets which is beneficial to build a positive corporate image and reputation. We thus propose:

RP7: Blockchain helps to create the value of "corporate social responsibility observation" to customers.

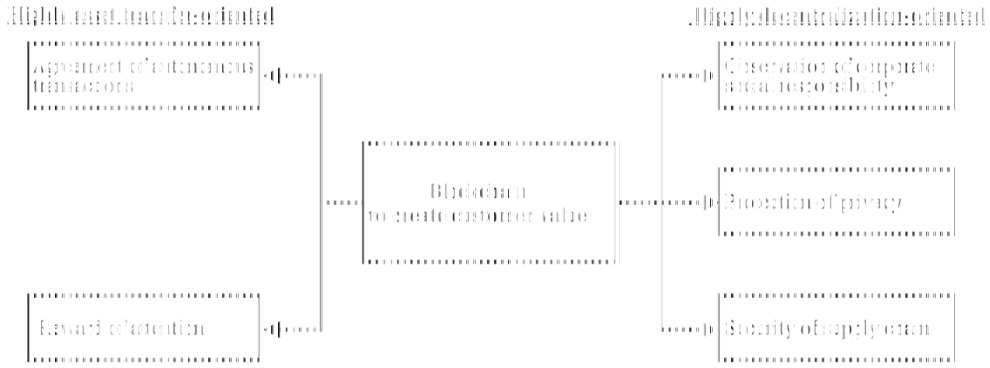
Discussion

A Research Framework for Blockchain to Create Customer Value

A research framework for blockchain to create customer values is proposed in this paper (Figure 3). Based on the strategic business values of blockchain (see Figure 2), the five ways that blockchain creates customer value may be classified into two patterns: the highly decentralization-oriented and the highly asset transfer-oriented.

The highly decentralization-oriented customer value mainly relies on the blockchain to create a marketing system with information transparency and trust enhancement. Blockchain allows customers to have control over the use of privacy information. Meanwhile, firms give back the control of privacy information customers. Blockchain provides a secure and reliable authentication mechanism in terms of product traceability. Finally, blockchain empowers customers to examine whether a firm is worthy of its name in terms of corporate image and brand reputation.

Figure 3. A Research Framework For Blockchain To Create Customer Value



The highly asset transfer-oriented customer value mainly relies on the transaction mechanism of digital rights created by blockchain. From the perspective of customer relationship management, firms can use blockchain in loyalty schemes to allow customers to enjoy monetized rewards. In terms of marketing communication strategies, blockchain helps companies directly reach out to customers. It would not only alleviate the digital advertising fraud, but also allow customers to be rewarded for their attentive efforts.

Moreover, in the case of integrating online and offline service systems, the smart contract of the blockchain not only saves transaction time, but also ensures that the service process is not interfered by third parties. Furthermore, smart contracts enable customers to enjoy pleasurable experiences during the value creation process by effectively linking cash flow and information flow.

Conclusion and Future Research Directions

In this paper, we clearly conceptualize how blockchain creates strategic business values. From the perspective of creating customer value, then we analyze the five ways that blockchain is applied to marketing innovation and propose a research framework for blockchain to create customer values. The outcome helps researchers to further investigate the development of blockchain in the field of marketing and brand strategy in the future.

As an emerging research topic, studies of practical cases on blockchain will be an appropriate way to systematically transfer industry experiences into academic topics (Treiblmaier, 2019). The results of our research would provide a sound theoretical basis for case studies. Furthermore, our propositions and framework will help practitioners evaluate market opportunities of blockchain and analyze ensuing competitive

positions. Currently, marketers have been somewhat conservative towards blockchain applications (Harvey et al.,2018). The reasons are threefold. First, the technicality side of blockchain is anything but easy to understand. Secondly, the media has been exaggerating the power of blockchain. Lastly, the enormous chaos of cryptocurrency in the early stages of blockchain development. Therefore, our study provides marketers with a tool to evaluate how firms could apply blockchain to develop marketing innovations to create strategic customer values. Future research will need to extend the scope of this paper in order to examine the relationship between blockchain and marketing organizations. When adopting innovative technology, it is sometimes rejected by the organization's incumbent systems (Christensen, 2013). A successful strategic reorientation is also contingent upon an appropriate structural adaptation of an organization. Consequently, it is necessary to explore the impact of organizational resistance or limitations to make use of blockchain to create customer values.

Finally, the impact of the external environment is an important subject deserves further investigation. For example, it is imperative to anticipate the application of blockchain would need to be fine-tuned with emergent technological laws and regulations (Davenport, et al., 2020). In addition, the "scope" of blockchain would probably create two problems which represent two major challenges affecting its power to create business values (e.g., Min, 2019; Carson, et al.,2018; Risius & Spohrer, 2017). First, a large number of computers with powerful computing capabilities and high-performance network bandwidth are required in order to implement the blockchain smoothly; the infrastructure in many areas is still insufficient. Second, blockchain users would have to grow significantly to enjoy the network effect and solidify the contribution of blockchain; users are still skeptical about the worth of blockchain. In fact, the current development of blockchain applications is stuck between the introduction and the growth stage. Thus, our research could provide insights to start exploring how firms take blockchain into their strategic initiatives and marketing innovation under various environmental circumstances.

References

Australian Government (Department of Industry, Science, Energy and Resources). (2020). The national blockchain roadmap. Retrieved from < https://www.industry.gov.au/sites/default/files/2020-02/national-blockchain-roadmap.pdf > .

Beck, R., Avital, M., Rossi, M., & Thatcher, J. B. (2017). Blockchain technology in business and information systems research. *Business & Information Systems Engineering*, 59(6), 381–384.

Boukis, A. (2019). Exploring the implications of blockchain technology for brand–consumer relationships: a

future research agenda. *Journal of Product and Brand Management*, 29(3), 307–320.

Bumblauskas, D., Mann, A., Dugan, B., & Rittmer, J. (2020). A blockchain use case in food distribution: Do you know where your food has been?. *International Journal of Information Management*. Retrieved from < https://doi.org/10.1016/j.ijinfomgt.2019.09.004 > .

CAICT, (2019). White paper of blockchain in China, Retrieved from < http://www.caict.ac.cn/kxyj/qwfb/bps/201911/t20191108_269109.htm > . (in Chinese)

Carson, B., Romanelli, G., Walsh, P., & Zhumaev, A. (2018). Blockchain beyond the hype: What is the strategic business value? *McKinsey Quarterly*, 2018(4), 118–127.

Casino, F., Dasaklis, T. K., & Patsakis, C. (2019). A systematic literature review of blockchain-based applications: Current status, classification and open issues. *Telematics and Informatics*, 36, 55-81.

Cavale, S. (2017). P&G says cut digital ad spend by $200 million in 2017. Retrieved from < https://www.reuters.com/article/us-procter-gamble-advertising/pg-says-cut-digital-ad-spend-by-200-million-in-2017-idUSKCN1GD654 > .

CFTC (Commodity Future Trading Commission, USA). (2018). A primer on smart contracts. Retrieved from < https://www.cftc.gov/sites/default/files/2018-11/LabCFTC_PrimerSmartContracts112718_0.pdf > .

Christensen, C. M. (2013). *The Innovator's dilemma: When new technologies cause great firms to fail*. Boston, MA: Harvard Business Review Press.

Connick, H. (2017). What marketers need to know about blockchain, *Marketing News*, 51(10, November-December): 12-14.

Crosby, M., Nachiappan, N. & Pattanayak, P. (2016). Blockchain technology: beyond bitcoin. *Applied Innovation*, 2, 6-10.

Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, 48(1), 24–42.

Germany Federal Government (2019). Blockchain strategy of the Federal Government. Retrieved from < https://www.bmwi.de/Redaktion/EN/Publikationen/Digitale-Welt/blockchain-strategy.pdf?__blob=publicationFile&v=3 > .

Ghose, A. (2018). What blockchain could mean for marketing, *Harvard Business Review*. Retrieved from < https://hbr.org/2018/05/what-blockchain-could-mean-for-marketing > .

Ghose, A. (2018). What blockchain could mean for marketing, *Harvard Business Review*. Retrieved from <https://hbr.org/2018/05/what-blockchain-could-mean-for-marketing > .

Gupta, V. (2017). A brief history of blockchain. *Harvard Business Review*. Retrieved from < https://hbr.org/2017/ 02/a-brief-history-of-blockchain > .

Harper, C. (2018). Washington Post adds support for Brave browser, basic attention token. Retrieved from < https://bitcoinmagazine.com/articles/washington-post-adds-support-brave-browser-basic-attention-token > .

Harvey, C. R., Moorman, C. & Toledo, M., (2018). How blockchain can help marketers build better relationships with their customers. *Harvard Business Review*. Retrieved from < https://hbr.org/2018/10/how-blockchain-can-help-marketers-build-better-relationships-with-their-customers > .

India. (2020). Blockchain: The India strategy. Retrieved from < https://niti.gov.in/sites/default/files/2020-01/Blockchain_The_India_Strategy_Part_I.pdf > .

Internet Advertising Bureau. (2018). Blockchain for video advertising: A Market snapshot of publisher and buyer use cases. Retrieved from < https://www.iab.com/wp-content/uploads/2018/02/Blockchain_for_Video_Advertising_Publisher-Buyer_Use_Cases_2018-02.pdf > .

Jesus, E. F., Chicarino, V. R. L., de Albuquerque, C. V. N., & Rocha, A. A. de A. (2018). A Survey of How to Use Blockchain to Secure Internet of Things and the Stalker Attack. *Security and Communication Networks*, 2018, 9675050. Retrieved from < https://doi.org/10.1155/2018/9675050 > .

Kumar, V. (2018). Transformative marketing: the next 20 years. *Journal of Marketing*, 82(July), 1-12.

Kumar, V., Ramachandran, D., & Kumar, B. (2020). Influence of new-age technologies on marketing: A research agenda. *Journal of Business Research*, Retrieved from < https://doi.org/10.1016/j.jbusres.2020.01.007 > .

Lansiti, M., & Lakhani, K. R. (2017). The truth about blockchain. *Harvard Business Review*, Jan-Feb, 1-11.

Lewis, B. (2018). De Beers turns to blockchain to guarantee diamond purity. Retrieved from < https://www.reuters.com/article/us-anglo-debeers-blockchain/de-beers-turns-to-blockchain-to-guarantee-diamond-purity-idUSKBN1F51HV > .

Litz, R. A. (1996). A resource-based-view of the socially responsible firm: Stakeholder interdependence, ethical awareness, and issue responsiveness as strategic assets. *Journal of Business Ethics*, 15(12), 1355–1363.

McKinsey & Company. (2018). Blockchain beyond the hype: What is the strategic business Value. Retrieved from < https://www.mckinsey.com/business-functions/mckinsey -digital/our-insights/blockchain-beyond-the-hype-what-is-the-strategic-business-value > .

Min, H. (2019). Blockchain technology for enhancing supply chain resilience. *Business Horizons*, 62(1), 35-45.

Montecchi, M., Plangger, K. & Etter, M. (2019). It's real, trust me! Establishing supply chain provenance using blockchain. *Business Horizons*, 62(3), 283–293.

Newman, D. (2017). 4 ways blockchain will transform digital marketing and advertising. Retrieved from < https://www.forbes.com/sites/daniel newman/2017/11/14/4-ways-blockchain-will-transform-digital-marketing-and-advertising/#62755d5b3fb7 > .

Notheisen, B., Cholewa, J. B., & Shanmugam, A. P. (2017). Trading Real-World Assets on Blockchain. *Business & Information Systems Engineering*, 59(6), 425-440.

Rejeb, A., Keogh, J. G. & Treiblmaier, H. (2020). How blockchain technology can benefit marketing: six pending research areas. *Frontiers in Blockchain*, 3, 3. (Online publication, doi: 10.3389/fbloc.2020.00003

Risius, M., & Spohrer, K. (2017). A Blockchain Research Framework: What We (don't) Know, Where We Go from Here, and How We Will Get There. *Business and Information Systems Engineering*, 59(6), 385–409.

Sabine, P. (2019). How does blockchain root out blood diamonds from the world's supply market?. Retrieved from < https://www.scmp.com/magazines/style/luxury/article/3031368/how-does-blockchain-root-out-blood-diamonds-worlds-supply > .

Singapore. (2019). Singapore blockchain ecosystem. Retrieved from < https://opennodes.com/Singapore-Ecosystem-Report.pdf > .

Swan, M. (2015). *Blockchain: Blueprint for a new economy*. Sebastopol, CA: O'Reilly Media.

Swan, M. (2018). Blockchain for Business: Next-Generation Enterprise Artificial Intelligence Systems. *Advances in Computers*, 111, 121–162.

Swan, M. 2017. Anticipating the Economic Benefits of Blockchain. *Technology Innovation Management Review*, 7(10): 6–13.

Tapscott, D., & Tapscott, A. (2017). How blockchain will change organizations. *MIT Sloan Management Review*, 58(2), 10–13.

The Economist. (2015). The trust machine. Retrieved from < https://www.economist.com/news/leaders/21677198-technology-behind-bitcoin-could-transform-how-economy-works-trust-machine > .

Thompson, N. (2019). Mark Zuckerberg on facebook's future and what scares him most. Retrieved from < https://www.wired.com/story/mark-zuckerberg-facebook-interview-privacy-pivot/ > .

Travizano, M., Minnoni, M., Ajzenman, G., Sarraute, C., and Della Penna, N. (2018). Wibson: A decentralized marketplace empowering individuals to safely monetize their personal data. Whitepaper. Retrieved from < https://wibson. org/wp-content/uploads/2019/04/Wibson-Technical-Paper-v1.1.pdf > .

Treiblmaier, H. (2020). Toward More Rigorous Blockchain Research: Recommendations for Writing Blockchain Case Studies. *Frontiers in Blockchain*. Retrieved from < https://www.frontiersin.org/articles/10.3389/fbloc.2019.00003/full > .

Venkatesh, V. G., Kang, K., Wang, B., Zhong, R. Y., & Zhang, A. (2020). System architecture for blockchain based transparency of supply chain social sustainability. *Robotics and Computer-Integrated Manufacturing*, 63, 101896

Werbach, K., & Cornell, N. (2017). Contracts Ex Machina. *Duke Law Journal*, 67(2), 314–382.

Williams, A. (2018). Why marketers should pay attention to Blockchain. Retrieved from < https://www.forbes.com/sites/forbescommunicationscouncil/2018/01/24/why-marketers-should-pay-attention-to-blockchain/#3b23b04321d5 >.

Zuckerberg, M. (2019). A privacy-focused vision for social networking. Retrieved from < https://www.facebook.com/notes/mark-zuckerberg/a-privacy-focused-vision-for-social-networking/10156700570096634/ >

Zuckerberg, M. (2020). Every new year of the last decade I set a personal challenge. Retrieved from < https://www.facebook.com/zuck/posts/10111311886191191 > .