

VALUE TRANSFORMATION: FROM INTERNAL CAPABILITIES TO BLOCKCHAIN-BASED BUSINESS MODELS

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Abstract

The ongoing progress regarding blockchain technologies, apart from its main focus on cryptocurrencies, has illustrated features and functionalities that started a market revolution beyond the financial instruments, therefore ensuring the creation of a new era of Blockchain-Based Decentralized Business Models in the context of a sharing economy. This brief theoretic study explores the relationship between value and different business models until the implications of blockchain technologies and their underlying value drivers. Hence, based on a comparative and integrative analysis, I draw a brief picture on the adjustments suffered by Porter's value chain in order to create competitive advantage and utility for end-users in an emergent and innovative sharing economy. This introductory analysis is trying to cover value's evolution in relation to technological and cryptographic transformations by means of artificial intelligence, smart contracts and other decentralized application successfully used in the blockchain business models. Therefore, the study attempts to provide to both practitioners and academics a broad yet brief overall vision that assesses characteristics of value in relation to different stages of business strategies and models.

Keywords

Blockchain, digital business model, value chain, value creation, value dimensions, value capturing

JEL Classification

D46, Q55, M21, L86

Introduction

Thinking about a firm's competitive advantage, in most cases, leads us to the concept of a firm's ability to create more value than its market opponents (Porter, 1985; Brandenburger and Stuart, 1996). The higher innovation capabilities of the firm, the greater and lucrative the value creation will become. In order to secure the returns from innovation, many firms have turned their attention into becoming technology pioneers in their field by proposing key

innovations to the market (Adner and Kapoor, 2010). Nonetheless, in order to achieve a thriving success, a solely innovative approach does not represent the key to successful creating value, but depends on the constitution of an internal system of changes build upon an external network that embeds different actors into creating an ecosystem of complementary innovations (Adner, 2006). Moving beyond Porter's value chain framework (1985) and concept of competitive advantage, the process of creating value has later started to be understood from an ecosystem perspective, as a business strategy that consists in an approach for creating interdependencies between partners (Iansiti and Levien, 2004) that are described via both competition and cooperation (Afuah, 2000). Considering the uprising of Information and Communication Technology (ICT) (Perez, 2002) this type of collaboration has broadened its possibilities for creating an economy based on communication and sharing. Therefore, this context has created the opportunity for individuals to focus on specific individual and group projects in order to create value based on their own personal contributions and capabilities (Pazaitis, De Flippi and Kostakis, 2017). Those types of endeavors have now prepared the framework for the 'sharing economy' which developed into a new stream of business models where an individual allows to another individual the temporary use of services or goods, exchange facilitated by dedicated platforms (EC, 2016). Hence, the process of sharing becomes an equivalent to economic production based on social relations, whereas, the sharing economy involves the production of goods or services that are valued by virtue of an apparatus of social sharing (Pazaitis, De Flippi and Kostakis, 2017).

Even though we might think that the concept of a sharing economy represents a new idea, Coase highlighted in 1937 the fact that firms represent an alternative to the market-price mechanism when it would be highly efficient to produce in a non-market private agreement. While over the years value was created and co-created in extensive hierarchical manufacturing or service industries (multi-divisional business models) with substantial numbers of employees (Andreassen et al., 2018), nowadays, this system seems to have hit a dead end regarding the current perception of value on both customer and provider's side. Both Coase (1937) and Williamson (1981) predicted that by the year of 2050 all transactions occurring between individual buyers or sellers will be performed via high-tech platforms (e.g. AirBnB, Uber) in a collaborative decentralized economy based on peer-to-peer transactions (e.g. blockchain technology) phasing out middlemen and therefore, decreasing cost and increasing value and accessibility. Considering the new era of technology and development, those types of decentralized businesses have grown to our attention as T-model businesses (Andreassen et al., 2018) where the process of creating value takes place by facilitating interactions between parties on the base of an on-line platform.

But what is the meaning of a business model (BM) and how is value created or illustrated according to a specific BM? This concept has been long debated. In the context of rapid advances in ICTs, according to Magretta (2002) each firm is characterized by a BM, because it can provide further understanding regarding communication, management or strategic decisions (Osterwalder et al., 2005; Shafer et al., 2005) between business and technology stakeholders (Gordijn and Akkermans, 2001; Al-Debei and Avison, 2010). The BM's structure is relevant because clarifies the primary components of the concept regarding it's design, analysis or evaluation and has been depicted as means of creating value (Kallio et al., 2006) with different approaches regarding the concept of value dimension (Al-Debei and Avison, 2010). Moreover, in the digital economy, gaining competitive advantage has become a real issue if the company fails to take action by approaching a clear position regarding the creation of value. Therefore, Al-Debei and Avison (2010) mapped out a concept of the digital BMs that consider four core elements: value creation logic, value capturing mechanisms, value delivery architecture, and value stakeholder network. In this new dynamic context of information technology which has greatly revised market structures and firms competition (Bharadwaj et al., 2013), both scholars and practitioners have turned their attention to

blockchain technology as an advancement for carrying out trustless transactions (Risius and Spohrer, 2017) and frictionless and efficient ways of creating value.

Therefore, this study attempts to offer a brief overview on the adjustments underwent by the process of value creation, exploring its sources from a strategic, management and technological perspective.

Research background

By way of reviewing sources and configurations of value creation depicted by a wide spectrum of theoretical perspectives in entrepreneurship, strategic management and tech literatures, the study will focus primarily on the value creation potential embedded by blockchain technology in emergent tech markets. Moreover, the research will be focused on literature concepts starting from Porter's value chain analysis to the strategic network theory and ending with the late perception of value in blockchain technology. During this analysis theoretical concepts will be accompanied by practical examples originated from secondary data sources.

1. The value chain framework and its configurations

Porter's creation (1985) represents the leading reference regarding the concept of value chain and value configuration evaluation for creating competitive advantage as in the process of transforming inputs into outputs for a company. Respectively, it explains a firm's sequential process for adjoining production partners (Fjeldstad and Snow, 2017) with the sole aim of creating and delivering value to the chain's end consumers (Hua et al., 2019). However, in his work I could not find the value 'configuration' analysis because according to Porter value chain is the only value configuration recognized. According to this framework, competitive advantage derives from the disaggregation of the value creation process into a two-level generic taxonomy of activities. While primary activities (inbound logistics, operations, outbound logistics, marketing and sales and service) imply creating and delivering value to the customer, support activities (procurement, technology development, human resource management and firm infrastructure) represent a performance facilitator of primary activities (Porter, 1985). The end resulting activities will get the potential to generate different economics, being characterized by having a significant impact on differentiation or by representing a significant dimension of cost. Regardless Porter's (1985) popular framework of value chain, Stabell and Fjeldstad (1998) argued that its value creation logic might not be utterly interchangeable to service industries such as banking, tourism, insurance and even technology development, by virtue of their intangibility attribute, therefore, implementing the traditional value chain becomes a slightly limited aim (Peppard and Rylander, 2006). As a result, the authors introduced a new taxonomy of value configurations that incorporate value shop and value network in addition to Porter's value chain (Stabell and Fjeldstad, 1998).

Whereas the value chain represents a horizontal and sequential business process (Hua et al., 2019), the value shop is based on recursive feedback learning circuits (Gray et. al, 2013). Businesses that carry out their activities as value shops create value by assessing ongoing circumstances and adapting those by means of iterative learning as far as a desired solution will be identified (Kazan et al., 2015) in order to resolve a particular customer problem (Stabell and Fjeldstad, 1998). On the contrary, businesses running as value networks create value by facilitating technologies to assist interactions among network actors. Consequently, value networks can be represented by their "dyadic", "polyadic", "parallel" (Hua et al., 2019), and/or concurrent activities (Kazan et al., 2015) whereby network parties (e.g., consumers, firms, suppliers) contribute to the co-creation of value (Peppard and Rylander, 2006). According to Fjeldstad and Snow (2017), all firms, regardless of being perceived as classic or digitalized, should assume one of the three types of value configurations briefly analyzed in this section: value chain, where value is created through sequential processing of inputs into desired outputs, value shop, which utilizes its internal capabilities for problem solving

and value network which co-creates value by means of mediating technologies (Hua et al., 2019).

2. From the Triadic Model to value dimensions of a Digital Business Model

A business model can be represented as the “design or architecture of value creation, delivery, and capture mechanisms (a business) employs” (Teece, 2010, p. 172), or as a package of definite activities and activity systems handled in order to satisfy anticipated or identified needs of a market, in conjunction with the specification of which parties (a firm or its partners) perform which activities, and how these activities are interrelated (Foss and Saebi, 2018). In the literature, this BM is often referred as the T-model via the representation of a two-sided market (Hagiu and Wright, 2015) where suppliers provide assets (e.g. accommodation - AirBNB or car - GetPony) or labor (e.g. free time - Uber Eats) for buyers to use, in exchange for a fee or another resource (Andreassen et al., 2018). Therefore, the platform portrays the traditional middleman ensuring a direct connection between buyers and suppliers (Gatautis, 2017) by “selling reduction in transaction costs” Munger (2015, p.199). Moreover, while transaction costs are substantially diminished, it can be argued that the T-model’s triumph may also be determined by the new business model, offering increased customer and supplier value added (Sexton, 2009).

From a supplier’s angle as in a person who is interested in offering to other people his time or assets, there are the gains on multiple levels: from an easy access to a national or international marketplace to the conveniently promotion of the business. On the other side, for the person interested in using the provider’s assets, services or time the main advantages reside in a wide range of opportunities and information via the access to market, cost-reduction, and even potentially personal services better tailored to their individual needs (Andreassen et al., 2018). Therefore, T-based BMs favor companies to innovate by the means they create, deliver, capture, and communicate value in new significantly distinctive approaches from the multi-divisional BMs. Theoretically, the creation of a sharing economy has deepened the interest manifested by scholars regarding the analysis of a BM, therefore, I found two main streams of research on the topic. On the one hand, management scholars have sought to understand how essential business processes are designed to create and capture value (Bharadwaj et al., 2013). On the other hand, information systems researchers have tried to tackle the value dimensions that determine value creation and capturing in digital settings (Al-Debei and Avison, 2010).

As mentioned in the introductory part of the analysis, Al-Debei and Avison (2010) illustrated interpretation of value in digital BMs as four distinct key elements: value creation logic, value capturing mechanisms, value delivery architecture and value stakeholder network. Because the value creation logic was broadly depicted in section one of the current title, our attention will be directed to the other three types of value dimensions. In a digital BM, the apparatus for capturing value expresses the firm’s rationale on extracting revenue by providing digital products or services (Kazan, et al., 2015; Hua, et al., 2019). The value delivery architecture of the digital BM is mostly based on firms’ resources and their specific structure (Al-Debi, et al, 2008). Considering its’ resourced-based origin (Wernerfelt, 1984) the concept of value delivery architecture, emphasizes how digital firms grasp and profit from technological resources in order to sustain or even create a competitive advantage. Therefore, the value delivery architecture can be defined as a “firm’s structural capabilities to orchestrate its technological resources to provide digital products and services” (Hua, et al., 2019) that cannot be easily imitated (Kazan, et al., 2015). The value stakeholder network involves an ecosystem in which different companies are interconnected by the means of a network to co-create and interpose configured resources and components to collect value in an in-depth, coordinated methodology (Kazan, et al., 2015; Hua, et al., 2019). Further on it illustrates how firms correlate and collaborate with their stakeholders to provide digital products and services (Osterwalder, Pigneur and Tucci, 2005). By stakeholders the authors include all participants

who engage in different firm functions, probably including consumers, distributors, intermediaries, partners, and suppliers (Rajala and Westerlund, 2007; Hua, et al., 2019).

Due to the fact that blockchain companies, considering their technological characteristics, are very much alike firms competing in digital environments but at a higher level of automation, the aforementioned value dimensions of digital business models could be easily applied to unwind the rationale behind blockchain-inspired BM pursued by these companies.

3. The Blockchain Technology and value

At the hand of math and cryptography, blockchain represents a data architecture that facilitates the creation, distribution and storing of a digital ledger of transactions among a dispersed network of computers, which creates a decentralized and distributed database useful in transactions regarding money, goods, property, contracts, work, transportation, healthcare or even voting (Kiviat, 2015; Lemieux, 2016). This technology favors the creation of a record whose authenticity can be verified by the community involved in the process, which constitutes blockchain “trustless” technology. By “trustless” can be understood that “value” over a computer network that can be verified, supervised and enforced without the need of a trusted third party or central institution (e.g. the Triadic BM). The idea is often known as in “cutting out the middleman” and creating a peer-to-peer (P2P) network where a transaction is performed directly between two parties as in the case of a financial cryptocurrency like Bitcoin (Dutra, et al., 2018). Transposing the idea of a P2P network to current online platforms, several new tech startups aspire to create a “trustless” alternative to the “sharing economy” platforms (e.g. Airbnb, Uber, BlaBlaCar) contouring new decentralized blockchain based sharing economy business models (BSEBM) where customers and suppliers make transactions directly using blockchain technology with the main goal of having a transparent and decentralized data storage and cutting costs on transaction fees (Tapscott and Tapscott, 2016a). As blockchain technology is said to facilitate “the exchange of value” skipping the need for an “intermediary” (De Filippi, 2017), blockchain companies operating as value chains aspire to convert inputs into desired outputs in an adequate approach (e.g., producing valued market outputs such as new cryptocurrencies via mining) (Kazan, et al., 2015), whereas those operating as value networks offer mediating services among network actors (e.g. facilitating frictionless transfers of value (fintech) – Ripple). There are also blockchain companies that operate similar to value shops providing solutions to clients (Hua, et al., 2019) (e.g. helping a company to the implementation of a blockchain).

In the new current blockchain and cryptocurrency literature, based on Al-Debei and Avison (2010) four value dimensions of digital business models, Hua, et al. (2019) proposed a few case studies regarding the new BSEBM and the way that value dimensions are perceived. Despite the fact that all four value dimensions can be encountered in new BSEBMs it is relevant to emphasize that value delivery architecture is represented by the blockchain itself, and essentially all blockchain companies rely on this chain as in their primary value delivery architecture that ensures the connectivity between participants and determines the information circuit. A comparable situation involves the value stakeholder network where stakeholders, even though they have to perform mainly the same tasks, their identity is protected by the anonymity feature of the distributed ledger. In other words, the activities executed by stakeholders regarding the authentication and inscription of data transacted onto the ledger are identical, the only differentiation variable being the variations created by stakeholders’ activities on the chain (Hua, et al., 2019). Therefore, the process of innovation via different value dimensions can consist in originality and efficiency despite the two common value dimensions to all BSEBMs: delivery architecture and stakeholder networks.

Future blockchain business innovations will probably consist in terms of value creation rationale (logic) and value capturing mechanisms, because the creation of value must be strongly bound to its capture in order for a businesses to triumph and outperform its competitors (Hua, et al., 2019). On a value creation logic BSEBM, value could be created by

innovating on the blockchain architecture and building it as an open platform that third parties can use to develop their own business applications (e.g. the case of Ethereum where parties can build Dapps). Also, value could be created by displacing incumbents from conventional value chains (e.g. an interbanking cash transfer system that connects banks and provide frictionless transactions – Ripple and its decentralized ledger technology). In other cases, value could also be created by settling inefficiencies in conventional value chains (e.g., a traceability app for a product that leaves a storage in order to reach its final consumer – VeChainThor ecosystem). On the other hand, regarding the value capturing mechanism, on a BSEBM value is already captured by acting as a market equalizer for players who have been disadvantaged in conventional value chains (e.g. ChainFinance, Ripple) like the banking system (Hua, et al., 2019). In other instances value is captured via offering benefits to both parties who take part in the conventional value chains or for new solutions that can be transferred to other industries.

In the end, there are many ways in which this new stream of business models can be analyzed. For example, Al-Debei and Avison's (2010) value dimensions could be applied to Stabell and Fjeldstad (1998) value configuration therefore, discovering new types of BSEBM that will create real utility for both parties that are making use of the blockchain.

Conclusions

The Blockchain technology, with its reprimanded route as an innovative infrastructure for transferring value in cryptocurrencies, mainly Bitcoin, has managed to create a decentralized system defined through anonymity and lack of legal regulation, which lately proved to be useful also for organizations, therefore expanding its use case beyond the currency markets. To better understand how value might be created, captured, developed or manifested in these new types of business models this study attempted to briefly illustrate the value path in the business environment, considering all actors interested in the exchange of value and new methods for obtaining utility and reducing useless cost, generated by lack of sufficient development or the involvement of third middlemen parties. To deepen the analysis I tried to overlay Al-Debei and Avison's (2010) theoretical concepts to Stabell and Fjeldstad's (1998) and Hua, et al. (2019) analysis, who managed to illustrate new created patterns in blockchain-based business models.

There are many limitations to the present research mainly because it briefly illustrates how value perception has influenced the creation of new business models in the digital era. Moreover, it cannot be define by generalizability because the author used a few succinct examples in order to create an overall image regarding the concept. For further research it may be recommended the use of this theoretical framework in different case studies, with the technology representing various blockchain stages that are built upon each other (from blockchain 1.0 to blockchain 4.0) depicting their different purposes and functionalities that enable the creation or caption of value on different stages.

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