New Approach to A Disruptive Business Model with Dynamic Capability Under the Blockchain Technology

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Abstract This chapter aims to develop a holistic view of the blockchain business model framework with the role of dynamic capability. The study conceptualizes a dynamic capability framework with blockchain properties and business model understanding. The traditional approach to a business model with new technological improvements is the lack of defining the necessary business values that are captured and created from the digital environment. Specifically, blockchain technology generates additional properties that can even disrupt digital business processes. Therefore, it is necessary to build a new business model framework other than digitalization for blockchain technology to disclose disruptive values for guidance on business strategy. The study explains the detailed properties of the blockchain and classical business model and its logic. Later, a dynamic capability framework is combined with these views to establish a new business model for blockchain. This framework is the beginning for businesses that invest in blockchain to understand holistically how to extract the disruptive values out of blockchain technology and applications. Therefore, the study contributes to the businesses that invest in blockchain technology to realize the new benefits by changing traditional processes and distinctive capability which they will gain with the blockchain technology.

1 Introduction

The business environment and the way of making business have been evolving with the advancement of new technologies. The ideology of centralization of power keeps the classical structure of management in position with these new platforms. On the other hand, these new platforms and technologies enforce organizations to change their behavior on business models toward a more decentralized way. Clashes

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between tradition and contemporary approach disrupt business ecosystems without considering any market and sector. Brick and mortar retail companies are adopting their model partially to digital business models. Start-up companies build their model based solely on digital perspectives. Infrastructure companies create a digital marketing environment while constructing different structures and buildings. At the same time, internal and external relations of the companies are transforming from traditional to the digitalized environment. So, digitalization keeps pushing every segment of the business model to transform somehow into the new age of doing business to create and capture values with new approaches.

Traditional business models aim to produce and distribute better products/services efficiently with the help of closed-innovation, brand management, and minimum cost structure (Viswanadham, 2018). Even though the defense of the traditional way of doing things is prevalent, disruptive technologies adduce changing all structures of business ecosystems. Still, the aim is to create value for customers and create a profit for companies, however, agility, distribution, and openness arise as the new characterization for businesses. These characters are initiated with vast profound new information systems (IS) platforms. Companies that cannot achieve to establish platforms and change their business model will not be able to gain sustainable competitive advantage (VanAlstyne, Parker, & Choudary, 2016). Blockchain is one of the most promising IS platforms, which offers revolutionary changes socially and economically for the business ecosystem among new IS platforms (Filipova, 2018).

Blockchain is a technology that is famous for its cryptocurrency applications and services. Cryptocurrency product Bitcoin is more popular than the technology, which is a blockchain application like many others. The financial industry seems to focus more on the cryptocurrency part and attract more attention from the public. However, Blockchain technology is more than a financial application and service. It is the technology that creates an underlying platform for different businesses. The nature of this technology has the promise to disturb some structures of organizations. Thus, Blockchain defenders claim to revolutionize business models with decentralization, speed, security, and auditable properties (Risius & Spohrer, 2017). Davos, Group of the 20s are some of the most influential policy-making platforms in the world considers Blockchain as a game-changer and has been debating the underlying effect for the businesses and relations with governments because of these claimed disruptive properties of the technology. In addition, the World Economic Forum has surveyed that 10% of global GDP would be stored in blockchain technologies by 2027 (Carson, Romanelli, Walsh, & Zhumaev, 2018). Millions of dollars are being spent by giant technology companies to initiate Blockchain for their technological platforms like the Internet of Things (IoT), Industry 4.0, artificial intelligence, and others (Carson et al., 2018). Start-ups are implementing and developing applications and platforms with blockchain technologies for extensive business ecosystems. However, there are not many well-known applications and implementations rather than cryptocurrencies so far, which form hype around the technology. Although there are ongoing implementations of the technology, uncertainty of developed

systems creates a lack of understanding of how blockchain defines and disrupts business models to generate and capture business value (Risius & Spohrer, 2017).

The promise to change the traditional business model with blockchain technology implementation and applications are scarce and limited. Hence, our study compares the traditional business models and proposes a model with blockchain technology to address whether the technology is applicable to all sectors generally. Thereby, the study addresses the research question: What would be the necessary model with blockchain technology to maintain the foundation of businesses to create and capture values without making mystical promises? To answer this question, the study offers a new framework to have a holistic blockchain business model.

The remainder of this study is organized as follows. Next, the theoretical background of blockchain technology and its underlying concept are provided. Then, the literature review of the business model is discussed. Afterward, a new suggested framework is introduced concerning the research question. Finally, a discussion and conclusion are argued along with the managerial implications and future research suggestions.

2 Literature Review

2.1 Theoretical Background of Blockchain

Blockchain technology is always explained by cryptocurrency applications even though the technology exists way before cryptocurrencies became popular (Filipova, 2018). Instead of focusing on financial applications, this study nails down the facts, properties, and values of the technology itself.

The main characteristics of Blockchain are cryptographically captured, stored, distributed, transparent, and immutable digital a kind of database or ledger that is shared through a public and private networks (Carson et al., 2018; Risius & Spohrer, 2017). Conte de Leon, Stalick, Jillepalli, Haney, and Sheldon (2017) claim that these characteristics are desired and emergent properties of the blockchain. Conte de Leon et al. (2017) add that the characteristics of Blockchain are to be ordered, incremental, sound, and digital. Blockchain combines software engineering, game theory, and cryptography science fields. The game theory part is related to the mathematical models of conflict and cooperation between decision makers. The cryptography part of the blockchain is focused on securing the whole chain and the system (Mougayar, 2016). Blockchain behaves like a database as well. Distributed database behavior places the data into a container (blocks). Everyone knows that the data is yours but cannot see inside the container in the ecosystem (Mougayar, 2016). However, unlike database systems, Blockchain does not allow to store the data into a centralized mechanism. The immutability of blockchain prevents to delete, rewrite, and revise the data. In essence, blockchain cannot be merely claimed as a database (Furlonger & Uzureau, 2019). The explained identifiers of blockchain technology disrupt the way of doing business by changing the business value perception.

Technical Background of the system: Each computer is considered a node in a network. This network type is defined as peer-to-peer networking structure (Oh & Shong, 2017). Each node holds cryptographically chained of blocs consist of data that prevents failure (Carson et al., 2018). Blocks include components that are a set of messages or multiple transactions of data with a hash function, the previous blocks' hash values which are called timestamp, and a nonce which is a random number that verifies hash values (Conte de Leon et al., 2017; Nofer, Gomber, Hinz, & Schiereck, 2017). Hash values assure the integrity of the data in the blocks and the chains. When data is changed from a block, related hash values are also regenerated. The majority of the nodes in the chain should agree on the validity of the data and block, then a block and data can be added. Without a consensus between the nodes, a block cannot be updated or created, and the transaction cannot be completed. Blocks hold the historical background of transactions as well. The data is stored at specific points in time and kept track of these transitions. Thus, blockchain is considered as an immutable state machine (Mougayar, 2016). The state machine characteristics of blockchain facilitate two different types of which are called public and private networks. The public type of Blockchain is open to everyone and no access limitation. However, private ones are only limited to a certain ecosystem for which the blockchain network is built on.

The critical and important part of blockchain technology is the protocols. There are a variety of protocols with a set of conditions is being implemented for different industrial sectors and purposes. The important part of these protocols is algorithms that establish robust tools and middleware technologies (Mougayar, 2016). These algorithms construct trust services that can be categorized based on proof types. These proof types are proof in a consensus, proof as a service, and proof in a service (Mougayar, 2016). The most known protocol is proof of work (PoW) that is an algorithm mostly used for cryptocurrencies in which stands on proof of state consensus protocol. More than one miner work on the problems to create a block with PoW algorithm. It requires a high volume of energy resources, but it assures consistency and protection against any forgery without trusted intermediation (Risius & Spohrer, 2017; Zamani & Giaglis, 2018). PoW assures that all the transactions are copied identically to all networks. Especially in a public blockchain, everyone can join the environment, and able to vote to evaluate each transaction with PoW consensus protocol if the given problem is solved. All transactions are transparent but the enablers are anonymous (Filipova, 2018; Nofer et al., 2017). However, the critical part of PoW is gradually growing cost and time per block, transaction (Conte de Leon et al., 2017). There is a proposed alternative consensus protocol which is called proof of stake is less costly and uses less computer power than PoW. Each stake is either rewarded or punished depending on their transactional achievement or failure (Kang et al., 2018; Puthal & Mohanty, 2019). Another way of having a consensus is the proof of value (PoV) algorithm. This type of consensus determines the perceived value of the contribution of each node. Also, the system evaluates each contribution and its reputation in the ecosystem, then ascribes the influence accordingly. Proof of authority and proof of existing protocols are also

Table 1 Proof in a service and proof as a service categories

Proof as a service	
Proof of asset	Proof of ownership
Proof of identity	Proof of physical address
Proof of authenticity	Proof of provenance
Proof of individuality	Proof of receipt
Proof in a service	
Wedding registry	Counterparty transactions
Land registry	Accounting audits
Supply chains	Voting
Assets registrations	Deed transfer

Source: Mougayar (2016)

included in proof in a consensus type. Additional proposed protocols exist and are called Proof as a service and proof in service types which are depicted in Table 1.

2.2 Smart Contract

Blockchain technology promises to digitize the tangible assets with its capability of trust and distributed ledger technology with other promising applications that affect business models. A smart contract is a very well-known blockchain application that opens a new venue for the contractual agreements for all sorts of businesses that might change the traditional business models. Even though the smart contract idea introduced by Nick Szabo a long time ago (Giancaspro, 2017; Mougayar, 2016), it became popular recently with the implementation of Blockchain principles. The advantage of using a smart contract is to create a peer-to-peer agreement where every participant is agreed on the content of the digital contract and fulfills their obligations accordingly (Carson et al., 2018; Macrinici, Cartofeanu, & Gao, 2018).

The smart contract provides clear opportunities to reshape the business values stream by increasing efficiency, reducing transaction, and legal cost (Giancaspro, 2017). Moreover, triggering the automation of blockchain when the contract's content is met simplifies the business processes by reducing the infrastructure cost. Also, transparency and anonymity of the Smart contract build trust among all blockchain participants for that environment (Carson et al., 2018; Giancaspro, 2017). These functional elements of blockchain applications and their properties change traditional business processes by constructing new business value linkages. Eliminating traditional business creates an innovative business model. Therefore, this study proposes to implement the necessary holistic view of the business model to gain maximum benefits out of blockchain technology in an organization.

2.3 Business Model Innovation and Blockchain

New customer expectations, requirements, technologies, and regulations are forcing to establish a new form of business model. Also, not every element of the existing models fits with different technologies as well as blockchain properties. The model approach creates an understanding of overall business strategy with the guidance of related components that affect the way of doing business in a variety of sectors. Identifying operation issues and solving them is one of the characteristics of business model thinking. There are different models for different purposes, however, the common elements of which define business logic are the way values are created and captured for customers (Heikkilä, Bouwman, Heikkilä, Solaimani, & Janssen, 2016). Business models are conceptual perspectives that define the framework to capture the values and show how these values can be transformed into a profit (Ugray, Paper, & Johnson, 2019). It is a system-level approach to explain business operations. There are conventional methods to define business models for companies. However, digital technologies are transforming business models into an innovative type of approaches. Obviously, traditional business models will be disrupted by blockchain technology as well as value streams that are captured and created (Morkunas, Paschen, & Boon, 2019).

The well-known traditional business model is CANVAS was introduced by Osterwalder and Pigneur that contains nine principles with the concept of simple, relevant, and understandable ways of defining the functionalities of companies (Urban, Klemm, Ploetner, & Hornung, 2018; Wrigley & Straker, 2016). The firm level of the business concept is considered and asked the question of "what of doing business" while establishing the model with factors (Keane, Cormican, & Sheahan, 2018). The nine elements are; customer segments, value proposition, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structures, which analyses capabilities for efficiency and value for stakeholders (Aagaard, 2019; Morkunas et al., 2019). The missing part of this model is not capturing the data and the trust as a part of the value for a model (Aagaard, 2019).

Business model literature does not have a set of common components that describes how the models should be. Therefore, the St. Gallen Business model navigator develops the questions to define a business model. The model asks, "who is the customer?", "what is offered to target customer?", "How to build and disseminate the value proposition?", and "why the business model is financially viable" to apprehend the value of a business (Aagaard, 2019; Böhm et al., 2017; Gassmann, Frankenberger, & Csik, 2013). The other suggested models, the value design model is composed of value drivers, nodes, exchanges, and extracts that interacts interchangeably with one another. The ecosystem is the main driver of the value design model to create a holistic view between building blocks to identify the values (Aagaard, 2019). Business DNA (design, needs, aspirations) model works within three blocks of values that interact with elements of given systems. Interaction occurs by answering "How?", "What?", and "Why?" questions to define each

element in DNA blocks. D blocks consist of key partners, resources, and activities. N block contains channels, customer relationships, and segments. A block deals with a value proposition, revenue, and cost (Sun, Yan, Lu, Bie, & Thomas, 2012). When these models define the elements of blocks, they always see the value through some additional intermediaries to explain the business model. However, blockchain promises to eliminate an intermediary from the business structures. These commonly used business models seem that they are not capable enough to define blockchain used business properties and values because of their static approaches.

The physical boundaries are expanding, and data is broader than ever. Created platforms are interacting with external entities as well. The relationships of the systems are like a symbiotic type of dependence between internal and external of the companies which creates an ecosystem. Lean and agile types of structures with these new technological grounds create new opportunities to capture and create new distributed and decentralized values for businesses (Krco, van Kranenburg, Loncar, Ziouvelou, & McGroarty, 2019). Therefore, the whole system and the contributors of that ecosystem need to be considered to innovate a value-driven dynamic model. A linear and traditional type of business model is evolving to a more dynamic network type of structure because of new technological advancement with hypoconnectivity. Building dynamic capabilities help to create contingency plans to integrate business strategies with dynamic business models that consider digitalization. New business model innovation implements sensing, seizing, and transforming capabilities to establish digital models. Digital business models with these dynamic capabilities will be constructing a new approach to business strategy, design, and also creates understandable business models that captures the competitive advantage (Warner & Wäger, 2019).

Sensing capability provides to capture external ecosystem opportunities to find out the value creation for the digital business models (Warner & Wäger, 2019). Sensing the value for external and internal ecosystem would provide more dynamic models to operate businesses. Seizing capability is to grab the opportunity by allowing disintermediation, decentralization, and agility (Chong, Lim, Hua, Zheng, & Tan, 2019; Warner & Wäger, 2019). The result of this disintermediation, decentralization, and agility with customers, partners, and operations help to seize the value for businesses. Transforming capability is to share created and captured values among the ecosystem in which designed for digital dynamic businesses (Chong et al., 2019; Warner & Wäger, 2019). Thus, this capability supports active engagement among participants to innovate inside the value co-creation and fits the blockchain environment.

3 Blockchain Business Model with Dynamic Capabilities

The nature of blockchain technology has the power to transform traditional business models. Changing the classical structure with blockchain draws a new concept of business model innovation. There are case studies that layout current business

models and expected blockchain business models in different sectors (Chong et al., 2019; Mettler & Hsg, 2016; Oh & Shong, 2017), however, they do not share any framework which looks at the model holistically.

In this study, dynamic capabilities and blockchain characteristics are combined and proposed a holistic framework for the blockchain business model. At the same time, some of the elements would be injected from traditional and digital business models to create a hybrid structure for the blockchain business model.

The blockchain business model has been created with three main trust layers. Trust is the main component of the business model for which blockchain technology promises to establish building blocks for business benefits. The built trust changes and disrupts the classical model structures among the elements that create efficiency and values. Therefore, a created trust among infrastructure, participant, and output generates layers that have different created and captured values compared to the traditional models.

The first one is the infrastructure layer which consists of blockchain technological foundations. Infrastructure creates a trust layer with the foundational technology that is used to build blockchain itself. This layer provides transactional values for businesses because of the nature of the blockchain secure establishment. The core technological capability of blockchain generates value-related transactions with different platforms. These platforms can transform tangible assets into digital assets with different application opportunities. Also, public and private network values create different platforms, like smart contracts and cryptocurrency types of applications. The blockchain platforms give different architectural opportunities to build hybrid applications that may have a Web or not (Mougayar, 2016). Ability to have different platforms generate flexible business architectural designs to adopt a variety of sectors. The immutability of blockchain technology technically prevents having an exact copy, which creates trustworthiness for the system (Conte de Leon et al., 2017). Trust for blockchain is a core value that is paved in every step of the infrastructure that creates the network integrity. The consensus system is the backbone of blockchain to validate transactions. Secure network interchange gives dynamic roles to the job (Tapscott & Tapscott, 2016). Also, a decentralized scheme of cryptographic algorithms for consensus properties of blockchain allocates the trust to a decentralized network. The principle of distribution for blockchain establishes no single point of control for the system so that no one can disable the system alone. Empowering the contributors with a distributed power prevents manipulation which exuberate assurance inside the infrastructure trust layer. Security is embedded in every part of the processes in the layers. Every participant should join to blockchain environment by accepting proof of concepts that defines security measures how to be a part of the network. Different types of security measures—like a public key or private key infrastructures, hashing algorithms, protecting the privacy, and keeping transparency at the same time—provide transaction values to be captured within the infrastructure trust layer (Mougayar, 2016; Tapscott & Tapscott, 2016).

The blockchain infrastructure trust layer creates the transaction values that crafts a digital mindset for sensing capabilities (Warner & Wäger, 2019). Every property of

the infrastructure trust layer generates special sensing capability for the business model to capture the values from the blockchain technology. Sensing capability triggers the network values that blockchain participants interact with each other for creating the values. While sensing the capability, transaction values seize the opportunities with the capability of blockchain infrastructure elements that are platform, immutability, decentralization, consensus, distribution, and security. Thus, new digital prospects are seized by having blockchain infrastructure trust layer properties with values for network and production.

After the dynamic capabilities are sensed and seized from the first layer as a transactional value, the second layer is the participant trust layer that is designed for business participants to establish a network value. In the traditional business model approaches, the "who?" question is asked to determine the customers, partners, customer segments, and so on. However, blockchain technology transforms these personal identification approaches to a collective identification approach that sees all participants are aligned at the same level to achieve the business goal. This way the shareholders or participants are empowered to decide in blockchain transactions more responsively, and inclusively with less manipulation (Tapscott & Tapscott, 2016). Moreover, channels, suppliers are also combined with direct relationships to complete the necessary business values. Peer-to-peer network value allows building public and private communication anonymously with the help of a secure consensus environment. Anonymous participants might be a different stakeholder, however, distributed transaction delivers the same data among peers to alter collaboration (Chong et al., 2019). Connected participants in the same network with a distributed ledger system operate in a collaborative environment (Conte de Leon et al., 2017). Every action inside the blockchain environment moves collaboratively to decide whether the transaction is suitable for the collective consensus rules that are defined in the infrastructure layer. Collaboration in the participant trust layer drives an enterprise-wide network structure value inside the business model (Solaimani, Bouwman, & Itälä, 2015). Thus, collaboration is the main channel for each peer in which appears to be a node for the entire network. Participation in blockchain provides security and control inside the environment. The participant trust layer enforces members to interfere depend on the defined consensus between the peers to check the validity of the transaction. Therefore, the blockchain business model raises the trust among members, and creates the business environment that each stakeholder shares direct business needs without any third party. Customer relationships are turned into a stakeholder participative network value that fulfills to aim direct business partnership without an intermediary that diminishes the hierarchical business relations (Morkunas et al., 2019). It is evident that blockchain technology produced values cannot be integrated with traditional business model dimensions.

Transformation capability is a reaction to the shifting business model with blockchain layers by exploiting infrastructure and participation layers for a more effective outcome (Wójcik, 2015). Successful transformation capability entails to sense and seize for relevant changes in order to adopt the technology (Braganza, Brooks, Nepelski, Ali, & Moro, 2017). Transaction and network values of each layer are being converted to the production stage with the transformation capability.

Transformation capability integrates blockchain technology with business processes with production values (Warner & Wäger, 2019). The transformation begins with sensing and seizing capability that captures the values from transaction and network to the output to create end product results of the blockchain technology. The capability of transforming from previous trust layers to the output trust layer derives the blockchain business model from the perspective of value proposition, revenue stream, and cost structure. This new perspective generates a distinctive set of values for blockchain output with trust in the operating environment (Wójcik, 2015).

The output trust layer contains new production, revenue stream, and cost structure values that form the blockchain business model last layer. Privacy is one of the leading values from blockchain technology implementation that transforms all of the capabilities that are embodied from other layers in the model. Privacy is an indispensable value to reach for every technological transformation. However, by nature, blockchain technology provides this value with cryptographically secured encryption from the beginning of infrastructure to a personal level (Mougayar, 2016). Protecting personal or transactional data is required by laws from which every authority puts in place. Blockchain technology automatically delivers privacy by keeping the personal information encrypted by distributing the data among peers. The transparent nature of blockchain makes visible every participant to overlook to the transactions which increase the confidence and trust (Giancaspro, 2017). While performing transparency value with distributed ledger by end-to-end processes, the anonymity of individuals is preserved at the same time with blockchain infrastructure trust layer that creates an output layer which is not considered in traditional business models as a proposition value (Burkhardt, Frey, Hiller, Neff, & Lasi, 2019; Faber & Jonker, 2019; Tapscott & Tapscott, 2016). Besides, public and private blockchain type of implementations also keeps the total privacy among participants even though the public one has generic purposes (Mougayar, 2016).

Speed is a challenging and controversial part of the value creation by blockchain technology. Performance and efficiency are the expected results of blockchain that triggers the speed. Direct communication in network values is expected to increase transaction speed with blockchain technology. Especially in the financial sector, blockchain technology can reduce the authorization waiting time among different portfolios between stakeholders (Morkunas et al., 2019). Some of the financial instruments' settlement takes time with traditional transactions. Nevertheless, removing the additional transactional burden from the network, blockchain technology has the opportunity to increase speed and efficiency from the unbanked and underbanked participants (Tapscott & Tapscott, 2016). Even though some studies are skeptical about blockchain technology transaction speed because of the technical constraints during the consensus (Chong et al., 2019; Nofer et al., 2017). The speed of blockchain technology is constantly improved which is considered a customer value creation for production values in the proposed blockchain business model.

Innovative business models attempt to reduce and manage the cost to unfold for new opportunities that create a unique value proposition (Wrigley & Straker, 2016). Therefore, unique value creation with a low-cost opportunity on blockchain technology provides a new market structure that disrupts the traditional businesses. First

of all, distributed ledger technology allows eliminating more infrastructure investment to store the data in a central machine. Likewise, eliminating the third-party involvements among the buyer and seller removes the additional fees that the customer needs to pay for the services. Peer-to-peer participation that is built on coordinated distributed network value with transformative applications helps to reduce transaction cost, which creates and captures new business values (Lakhani & Iansity, 2017). Blockchain sits on the digital communication and infrastructure technologies which allows a reduction of the cost of new innovative products that are driven out of this multilevel architecture (Lakhani & Iansity, 2017). There are some dubious approaches from the literature that claims that recording of each data distributed in different machines may increase in cost. However, the disintermediation capability of blockchain infrastructure would eliminate constant transaction costs by allowing participants to directly connect with different blockchain platforms (Treiblmaier & Onder, 2019).

Strong dependency on blockchain technology poses a question of how to reduce the risk in business. The current practice of businesses collects and stores the data in their private storage. Even though there are policies and rules to handle the data, there is always a risk to lose your information at the hands of third parties and providers because of the data breach caused by intruders. Thus, the absence of intermediaries in blockchain and keeping the data in participants' or peers' platform increases the security and reduces the risk of losing data. Also, internal use of blockchain technology creates a low-risk solution for physical and digital assets, recording the transactions, and identity verification with a single-use application opportunity which helps to build more production values with advanced solutions in the blockchain business model (Lakhani & Iansity, 2017; Nofer et al., 2017). Blockchain transactions reconcile immediately with the other parties irrevocably which eliminates the agency risk as well (Tapscott & Tapscott, 2016).

Transparency in blockchain generates a significant value proposition to identify and validate the transactions. Each node on a blockchain is aware of the transaction and its content with a cryptographic secure connection (Lakhani & Iansity, 2017). Participants manage security, validity, and reliability with the contribution, authentication, and inscription process without compromising the transparency that creates and captures the business value in blockchain technology (Chong et al., 2019). The biggest value creation of transparency is to build trust among peers. Keeping the transactional records permanently ensures transparency in the layer (Pazaitis, De Filippi, & Kostakis, 2017). The infrastructure, participants, and output trust layers compose the transparency that brings confidence to each transaction that occurs securely in an anonymous way.

The sharing economy is a common practice for technological platforms. The idea of sharing economy makes everyone spend value to receive resources. After capturing the value from the resources, you try to rent these resources to others completely. However, in the metering economy, blockchain technology helps you to share your residual resources by having a decentralized value transfer protocol. You securely allow and assign a blockchain participant to consume your resources by charging or whatever the rules you designed in your smart contract to be processed in the

network. Value creation occurs for tangible assets with a metering economy in the output trust layer too. Practical examples appear in the autonomous vehicle market that is built on an open transportation network where participants own their private encrypted key to reserve their car in a blockchain environment (Tapscott & Tapscott, 2016). Thus, metering on blockchain gives an opportunity to create a business value allowing participants to operate in remaining resources. Furthermore, the blockchain platform allows owners to track and check whether the smart contractual agreement is complied with (Tapscott & Tapscott, 2016). So, trust is built on the production value to capture the metering economy. As a result, blockchain technology diverting the sharing economy to the metering economy by delivering effective and efficient production values with the use of tangible and intangible assets by creating a revenue stream.

Supplying the products all over the market and tracing back to the root of the production place when it is needed to cause complications for customers, providers, and end-users. The blockchain output trust layer ensures all the participants identify the root of the transaction to reach the main cause. The Time-stamp properties of blockchain with transforming capability in the business model resolve inefficiencies and increases the quality of the product with traceability that creates and captures the production value chain for the businesses (Chong et al., 2019). Especially in supply chain practices, blockchain trackability captures the value for suppliers, producers, as well as consumers to track the source of information, product, and services to provide secure and trustable results.

A wide range of systems and models are designed with authority or some intermediary connection to build trust among participants as well as control the processes. The banking system is a well-known type of intermediary system that builds trust among two parties that creates and controls the transaction. At the same time authorities in every sector make sure each process is operated in accepted rules, regulations, and policies to establish concusses and agreements among the parties that involve the business processes (Conte de Leon et al., 2017). However, the blockchain business model disrupts the intermediaries and authorities by directly integrating the participants of the blockchain environment. It does not demolish the intermediary and authority for good but supersedes its functionality with a proof concept (Mougayar, 2016). The proof concept combines all these trust layers and establishes automated systems that control consensus securely over the system-defined algorithms, which removes the third-party involvement in the proposed blockchain business model. The autonomous agents act upon the consensus with which transaction values are transformed into a more valuable organization without the additional burden of intermediary and authority. The blockchain business model determines the changing customer need effectively with the production value of the model with distributed, secure, and direct communication.

4 Discussion and Conclusion

Technological innovations transform firm structures, value propositions, cost structures, revue streams that are established on the traditional understanding of business models. Blockchain technology is not a new technology, but it begins to disperse recently as an application. The properties, technical and practical capabilities of blockchain started to inject deviant promises for the business environment. Some of them are a bubble of technology, while others are accepted as a revolution in the business world. Financial institutions see as an opportunity to eliminate cost, additional processes, on the other hand, regulatory bodies perceive as a threat because of the implementation issues that eliminate the control over the system. A wide range of sectors little or more finds a solution for their businesses. Therefore, blockchain can be disruptive in every sector while it might be a dangerous tool that removes the authority on the processes. Too many hypes moving around the blockchain technology makes the technology more interesting to implement for companies.

The application that is built with blockchain technology is growing among different sectors which have traditional business models. Even countries are implementing their digital governance structure with a blockchain environment. Classical business models lack inclusiveness for a new digital ecosystem that needs to change the business understanding of processes and revenues. Besides digital innovativeness on the businesses, specifically, blockchain technology and its applications generate an exclusive environment. Consensus-driven, decentralized, secure, and distributed organizations with this technology are changing the way of the classical understanding of business processes from leadership to production and operation stage. Therefore, trying to define business models with traditional approaches to digital businesses will not help to understand and guide companies that wish to implement blockchain technology in their businesses. Previous researches (Chong et al., 2019; Mariappan, 2019; Morkunas et al., 2019; Nowiński & Kozma, 2017; Oh & Shong, 2017) investigated the relationships between blockchain and business model. Nevertheless, some of them modify the existing traditional business models, others create a model for a specific sector, or they only focus on digital transformation generally. Our approach is to establish a model to look at blockchain-specific properties under the different layers with different values by combining dynamic capability structures. This conceptual approach aims to reach a holistic way to understand and create a model that guides general business expectations that answers specific model questions. The proposed model framework explains each functional trust environment with its values to clarify investors' expectations on the properties of the blockchain. The model framework contribution is to build a clear business strategy with blockchain applications and show business leaders how each property of blockchain creates and captures specific values at every level of the trust. Every sector, company, or government that transforms its processes into a digital structure can capture a piece of value with dynamic capabilities by using the proposed blockchain business model. Also, this blockchain business model

framework proposal might provide new opportunities for a wider perspective on the values of blockchain can create, the businesses can capture with it. Therefore, this holistic view of the blockchain business model needs to be tested empirically to improve a more constant and solid foundation for businesses that prefer to use and implement blockchain technology and its applications. Thus, every layer of the framework can be used independently or together to define blockchain business ecosystem values for different sectors. Consequently, this model would open a new research avenue to improve the maturity of the framework for the blockchain businesses that will scatter around in every ecosystem soon.

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