

Changes and Digitalization of Business Models in Italian Blockchain Companies

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ABSTRACT

In the last decade the development of technology, of digital platforms and infrastructures has created significant effects on the concept of entrepreneurship so much that it has come to speak of "digital entrepreneurship" (Hansen, 2019; Nzembayie et al., 2019; Kraus et al., 2019). However, for companies, they should be transformed from different points of view to grasp the scale of innovations and gain a competitive advantage in a constantly evolving digital world (Rogers, 2016; Nambisan et al., 2019). This work aims to understand how Italian companies have changed their business models following the implementation of blockchain technology. To construct and test, we have used a case theory method (Gummesson, 2017), a methodology that generates the possibility of understanding the evolution of a company or an industry's reference business model and the impact of technological innovation, and enables us to have an in-depth understanding of how to use the blockchain technology. The empirical data pertain (14 companies) that are part of the Italia4Blockchain association, a business association that studies and research on Blockchain technology in Italy. The work offers a first description of the economic and management consequences of the application of the blockchain in the Italian blockchain ecosystem.

1. Introduction

Digitization has completely changed the approach of companies towards the market. This has brought about great changes both from the services offered by the companies and of the business model (Parida et al., 2019). Industry 4.0 is synonymous with strategic innovation of a company's business model and this leads to the introduction of new competitive factors, the creation of new markets starting from the satisfaction of emerging needs, but also of existing ones (Lasi et al., 2014). Technologies promote openness in various ways and, consequently, digitization has influenced the nature and degree of openness to innovation and entrepreneurship of companies (Nambisan et al., 2019). According to this perspective, openness implies that individuals and organizations should collaboratively pursue innovative entrepreneurship and participate jointly in the decision-making process (Wareham et al., 2014).

Furthermore, some scholars argue that digital transformation refers to a business model driven by changes associated with the application of digital technology in all aspects of human society (Stolterman and Fors, 2004; Henriette et al., 2015; Hess et al., 2016). Therefore, companies must exploit these technologies to innovate their business models, developing strategies that integrate both corporate and IT strategies, guided by the implications of digital transformation (Bharadwaj et al., 2013; Sertia et al., 2013; Hess et al., 2016).

A transformation of business model involving the integration of both scientific and market knowledge is needed to develop commercially viable new products and services based on these new technologies (Fontes, 2005). How the new technologies,

like Blockchain, a decentralized transaction and data management technology, can disrupt industries and business models has aroused interest from researchers and practitioners (Friedlmaier, Tumasjan & Welp, 2018; Iansiti & Lakhani, 2017). Blockchain technology is a new field of study (Zhao et al., 2016) and many publications with scientific rigour are surfacing. To fully explore the concept of blockchain technology and its underlying characteristics, the literature review is conducted (Seebacher & Schüritz, 2017).

We identify gaps in the literature and tools, calling for the change of business model and the implication of blockchain technology.

This paper addresses the following research questions:

R.Q: How did Italian companies change their business model by implementing Blockchain technology?

We carried out a research project on 14 companies adopting Blockchain technologies in different sectors.

The implication of this evidence contributed to opening up the debate on the implementation of the blockchain in a context, such as the Italian one, in which there is still a strong information asymmetry and scepticism on the topic. This study proceeds as follows. The next sections develop the literature background about digital entrepreneurship, business model and blockchain technology. After that, the findings sections outline the main results and the final sections present the main preliminary discussion and implications for managers.

2. Literature Review

2.1 Digital Transformation and Entrepreneurship

In recent years, digital transformation (DT) has emerged as an important phenomenon in research and for professionals (Vial, 2019). At a high level, DT understands the profound changes taking place in society and industries through the use of digital technologies (Agarwal et al., 2010; Majchrzak et al., 2016). Therefore, companies must exploit these technologies to innovate their business models, developing strategies that integrate both corporate and IT strategy, guided by the implications of digital transformation (Bharadwaj et al. 2013; Sertia et al. 2013; Hess et al., 2016).

Westerman et.al. (2014) ask whether the digital transformation is the solution to emerging business challenges in the digital age or is another marketing keyword.

However, research has shown that technology is only part of the complex puzzle that drives the digital transformation process of business models of the company (Kane et al., 2015); strategy, structure, processes and culture must be capable of generating paths for value creation (Karimi and Walter, 2015; Selander and Jarvenpaa, 2016; Svahn et al., 2017; Vial, 2019).

Morakanyane et al. (2017) argue that the ultimate impact that companies want to exploit from digital transformation is value creation for themselves and customers.

In this era of development of technology, of digital platforms and infrastructures has created effects on the concept of entrepreneurship so much that it has come to speak of "digital entrepreneurship" (Hansen, 2019; Nzembayie et al., 2019; Kraus et al., 2019).

In the literature, there are several provisions given by scholars (Bogdanowicz 2015; Hull et al., 2007; Beckman et al., 2012; Hansen, 2019; Kraus et al., 2019) on the subject under analysis, some of which have been summarized in table 1.

Bogdanowicz (2015, p.15) defined digital entrepreneurship as "a phenomenon associated with digital entrepreneurial activity" and declares that the entrepreneurial image is nothing but "enterprising human action in the pursuit of the generation of enhancing, through the creation or expansion of economic activity, identifying and exploiting new products, processes and markets compatible with ICT or ICT".

Another group of scholars defined digital entrepreneurship as "digital entrepreneurship is a sub-category of entrepreneurship in which a part or all of what would be physical in a traditional organization has been digitized" (Hull et al., p. 293). In line with this definition, Hansen (2019) includes both companies that are creating new technologies and those that have obtained a transformation, through the purchase of new digital tools. In contrast, Davidson & Vaast (2010), believe that the concept of digital entrepreneurship refers to the research by companies of new opportunities, through the exploitation of digital media and ICT, and they believe that the value generated by digital initiatives largely depends on the opportunities that companies intend to pursue (eg commercial, knowledge, institutional) Therefore, the term digital entrepreneurship refers to any type of company that carries out business and use of digital technologies instead of more traditional formats (Hair et al, 2012).

Table 1 - Main definition of the digital entrepreneurship-based literature

Authors	Definitions of digital entrepreneurship
Hull <i>et al.</i> (2007)	“digital entrepreneurship is a subcategory of entrepreneurship in which some or all of what would be physical in a traditional organization has been digitized”
Davidson & Vaast (2010)	“refer to digital entrepreneurship as the pursuit of opportunities based on the use of digital media and other information and communication technologies. Digital entrepreneurs rely upon the characteristics of digital media and IT to pursue opportunities”
Beckman <i>et al</i> (2012)	“technology entrepreneurship exists when developments in science or engineering constitute a core element of the opportunity that enables the emergence of a venture, market, cluster, or industry”
Bogdanowicz (2015)	“the enterprising human action in pursuit of the generation of value, through the creation or expansion of economic activity, by identifying and exploiting new ICT or ICT-enabled products, processes and corresponding markets”
Hansen (2019)	“digital entrepreneurship as a sub-category of entrepreneurship that includes enterprises that are actively employing and/or creating new novel technologies, as well as enterprises undergoing digital transformation through the adoption of digital technologies”

This relationship between technology and entrepreneurship involves a series of changes at the industrial, social and political level: first of all, several studies have shown that new technologies use the role of operational resources, able to encourage innovative entrepreneurial initiatives, which go beyond the traditional sectoral boundaries up to the formation of real ecosystems, networks and communities (Fischer & Reuber, 2011; Lusch & Nambisan, 2015; Rayna *et al.*, 2015; von Briel *et al.*, 2018).

However, for companies, this situation has implications in terms of transforming their business models, product/service innovations, or innovative experiences for customers (Boutetiere & Reich, 2018). In general, developed companies are radically transformed to grasp the scale of innovations and gain advantages in a constantly evolving digital world (Rogers, 2016; Nambisan *et al.*, 2019).

Companies should transform themselves radically to capture the scope of innovations and gain a competitive advantage in a constantly evolving digital world (Rogers, 2016; Nambisan *et al.*, 2019). The literature on digital and technological entrepreneurship can be divided into two mainstream: on the one hand, many authors have focused on the challenges and opportunities that emerged from digitization (Davidson & Vaast, 2010; Mazzarol, 2015; Hair *et al.*, 2012; Nambisan, 2017; Smith *et al.*, 2017; Srinivasan & Venkatraman, 2018); and on the other hand, they analyzed the characteristics of technological entrepreneurs (Yang *et al.*, 2015; Rojas & Huergo, 2016; Baradaran *et al.*, 2019).

Digitization offers high levels of flexibility to entrepreneurs thanks to the modularity of the technological components that can be paired and freely combined in individual configurations (Srinivasan & Venkatraman, 2018). Entrepreneurs build virtual links through online platforms, making communications faster and overcoming geographical distances (Smith et al., 2017). The digital environment is now an essential element of the operational context of companies, so those that are not able to seize the opportunities offered by digitalisation and adapt to the digital market will be marginalized (Mazzarol, 2015). However, while recognizing the advantages of digital adoption, the entrepreneur must face a series of challenges: first, investments in digital technologies are very expensive; furthermore, there is a great deal of false and misleading information that can confuse an inexperienced entrepreneur. In this regard, it is important to emphasize that the skills and knowledge of technology entrepreneurs have effects on a new business model (Rojas & Huergo, 2016).

Finally, just as the technological world is constantly evolving, digital entrepreneurs must be constantly informed about the challenges and opportunities that will emerge shortly.

2.2 Business Model transformation and technology implication

The term "business model" appears for the first time in the nineties. Several definitions emerge in the literature: in particular, one of the early definitions provided by Osterwalder, Pigneur and Tucci (2005, p. 17) who defined it as "a conceptual tool that contains a set of elements and relationships and allows you to express business logic to a specific firm ... to a description of the value company. partners for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams".

Others define the business model as a story of how a company works or how businesses do business (Magretta, 2002; Wirtz et al., 2016). However, Chesbrough et al. (2002) believed that the concept of value was a central element to understand the topic being analyzed.

The innovation of a business model takes place when the company adopts a new approach to market its activities (Gambardella and MacGahan, 2010) or the company changes some key elements and its logic of business (Bucherer, Eisert and Gassmann, 2012).

In this regard, research links the innovation of business models to the development of technology (Zott et al., 2011).

The rapidly changing economic landscape with digital transformation phenomenon presents many challenges to companies and society. In response to these challenges, companies have had to adapt and seize new opportunities, modifying or implementing a new business model. The business model can be defined as an activity system that is designed and enabled by a focal firm to meet perceived market needs (Zott and Amit, 2010). There are some definition of business model, Chesbrough and Rosenbloom (2002) consider the implications of the use of technology within the organization of the business model, underlining how technology is connected to the concept of economic value and market results. In the decade of the technology revolution, the concept of business model is directly connected with the concept of the collaboration network, based on shared values, such as transparency, privacy, or sustainability (Breuer & Lüdeke-Freund, 2017). Scholars argue the difference between the business model and business model innovation (Teece, 2010). Business model innovation is defined as "initiatives to create novel value by challenging existing industry-specific business models, roles and relations in certain geographical market areas" (Aspara et al., 2010, p.47) and is collected to concept of business model transformation that means there is "a change in the perceived logic of how value is created by the corporation, when it comes to the value-creating links among the corporation's portfolio of businesses, from one point of time to another." (Aspara et al., 2013, p. 460).

In the era of market innovation and new business model perspectives (Ritala & Sainio, 2014) the influence of digital technology on business model's variables. Attention to business model change is increasing in both entrepreneurial practice and research (Zott and Amit 2007; Wirtz, et al., 2016; Kim and Min, 2015). In the complexity of the technological landscape alliance management, revenue sharing and transparent cooperation are certainly the new success factors (Pateli & Giaglis, 2005). The relationship between BMs and technologies is essential to ensure continuity in business operations. Therefore,

companies must adapt their business model to assess the opportunities of technological change and achieve competitive advantage (Johnson et al., 2008).

Richter et al. (2017), identify the "economy of online sharing" as a possible new business model, in which digital platforms offer new opportunities to users for sharing information and digital content without an effective physical exchange; on opposite side, Di Domenico et al. (2014) follow a different approach to identify business models, through the analysis of online home-based initiatives, in which free movement and self-management become crucial elements. In light of this interest in

recent years, Clauss (2016) has developed a global measurement scale for the innovation of the business model that considers it as a unit of analysis.

In this regard, recently, researchers and professionals have focused their attention on the business model changes of companies and how they have changed compared to the business models of companies that do not use new technologies. According to Kulatilaka, N., and Venkatraman, N. (2001) the introduction of new technologies leads to the definition of additional capabilities, redefinition of the strategy, reassembly of relationships and structuring of a business model, to gain the opportunities deriving from the implementation of new technologies.

To innovate their business model, companies must know which components are considered relevant in the literature. In this regards, a recent article by di Wirtz, Pistoia, Ullrich and Göttel (2016, p. 41) aimed to define the concept as an integrated representation of the various activities of the company, identifying three key components: strategic component, customer and market component and value creation component.

Regarding the first component, these scholars believe that strategy is an essential element in a business model. It has a guiding role. The strategy allows companies to identify their mission and value proposition. In addition to strategy, the company's internal/external resources are considered important for the construction of the business model. Thus, Wirtz et al. (2016, p.7), clarify that resource model the core competencies needed for a company and the core assets of the business model are specified. It represents a summary of all the important tangible and intangible input factors of the business model. The third aspect of the strategic component is the network. In this aspect, the authors include the internal and especially external iterations of the business model.

In this work, uses the blockchain to better understand the potential impact that new technology has on the three key components of BMs of Italian companies.

Table 2 - Main implication technologies on Business Model-based literature

Authors	Technologies Implications
Chesbrough and Rosenbloom (2002)	...how technology is connected to the concept of economic value and market results.
Breuer and Lüdeke-Freund (2017)	... technology revolution enables shared values, such as transparency, privacy, or sustainability.
Ritala and Sainio (2014)	... market innovation and new business model perspectives the influence of digital technology on business model's variables.
Kulatilaka and Venkatraman (2001)	...new technologies leads to the definition of additional capabilities, redefinition of the strategy, reassembly of relationships and structuring of business model.
Pateli and Giaglis (2005)	... with technology increase complexity of the technological landscape alliance management, revenue sharing and transparent cooperation.
Wind (2008)	... a consequence of the digitalisation of the business model of companies was the transition to a network management logic.
Richter <i>et al.</i> , (2017)	... identify the "economy of online sharing" as a possible new business model, in which digital platforms offer new opportunities to users for sharing information and digital content.

2.3 Blockchain Technology

"The blockchain is an incorruptible digital register that can be programmed to record and certify not only financial transactions but also data and information, in which everything acquires value for the interested parties" (Tapscott & Tapscott, 2016).

Blockchain technology has become one of the most trending and disruptive technologies (Nowiński and Kozma, 2017). The main hypothesis is that the blockchain establishes a system of creating a distributed consensus in the digital online world. This allows participating entities to know for certain that a digital event happened by creating an irrefutable record in a public ledger (Crosby et al., 2016). Since the end of 2008, Blockchain was known as a distributed ledger for both financial and non-financial activities is one of the fast-growing research topics in recent years (Grover et al., 2018). Scholars indicate that the number of literature on Blockchain is still on the rise. At the beginning the literature was focused on the theme of Bitcoin and cryptocurrencies; subsequently, the concept of Blockchain evolved and paying attention to Blockchain techniques and the use

of this technology in many sectors, such as healthcare, supply chain, food, assurance etc ... (Miau and Yang, 2018). However, like any emerging technology, such as Blockchain, it exists within the confines of its intended use and application, it must demonstrate its added value compared to other solutions (Trump et al. 2018) for providing security and verifiability of information and data that must be exchanged between users. Further, to gain real efficiencies in the use of blockchain or any technology, there is a need to reengineer, rather than just automate, existing processes (O'Leary, 2017).

For this reason, blockchain technology may affect diverse dimensions of business models in diverse industries. It is recommended that managers should follow developments in this field to prepare for possible disruptions in their industries (Nowiński & Kozma, 2017). In the latest research in the area of business and management, it is clear that the concept of Blockchain can be linked to the development of all those economies in which resources are owned, shared and used by individuals, peers (Fraiberger and Sundararajan, 2015; Hamari et al., 2016), as in the sharing economy (De Filippi, 2017). Peer-to-peer platforms have the main objective of revolutionizing the relationships between the parties for resource sharing and creating a blockchain system based on trust without intermediaries (Hawlitschek, Notheisen & Teubner, 2018). Blockchain is a distributed, immutable, public digital ledger which is distributed among networked peers (Nakamoto, 2008). Blockchain is a chain of blocks that make up the ledger (Salah, et al. 2019). This ledger holds a permanent record of transactions and interactions that took place among participants accessing the decentralized blockchain network (Wood, 2014). The blockchain offers an immutable of the data record without having to trust an intermediary. Blockchain technology promise to revolutionize interactions between peers that require high degrees of trust (Hawlitschek, et al., 2018). In particular, in a lot of sectors, users need to manage data that is sensitive between the parties. The result is that the parties enable to collect and manage effectively the personal information data in a single view and also guarantee for the data integrity, with Blockchain technology (Rahmadika and Rhee, 2018). Although at present the full range of potential blockchain applications is still unclear, many use cases have been suggested for various kinds of industries that combine blockchain with other technology (Treiblmaier, 2018). A notable example is the fast development process of Blockchain and IoT based- technologies will bring changes in the way we live and connect, as long as the objectives of protecting user privacy and data are maintained (Banerjee et al., 2018). Another example is the concept of decentralized AI that is a combination of AI and blockchain (Dinh and Thai, 2018). At least, Blockchain technology creating new business opportunities in government sectors such as digital storage, authentication and maintenance of records; smart trust codification; the new market for digital payment services and global commerce (Shatkovskaya et al., 2018). Blockchain, as an emerging technology, has been considered to be a new means to deal with the needs of people, technology, and organization (Zhao et al., 2016). According to Casino, Dasaklis & Patsakis (2018), Blockchains introduced serious disruptions to the traditional business processes since the applications and transactions, which needed centralized architectures or trusted third parties to verify them, can now operate in a decentralized way with the same level of certainty. The blockchain technology affects considerably on the processes and traditional business models of companies.

3. Methodology

This work is part of a big research project on "The impact of Blockchain on the business model in Italian Ecosystem" with several sub-projects funded by the Italian Operational Programme on Research and Innovation (PON 2014-2020). Besides, the companies that have been placed under analysis are part of the Italia4Blockchain association, a business association, consultants, professionals, students, professional offices, startups, Public Administration, No Profit, universities, professors, university researchers, business networks and citizens active in the development, training, promotion, dissemination, study and research on Blockchain technology in Italy.

However, there is no empirical research that links the blockchain and business model of Italian companies. The research addresses this gap in the literature by using and adapting an existing theoretical framework based on the potential implications of the blockchain on the business model of Italian companies. We described the theoretically integrated business model proposed by Wirtz et al. (2016) in our literature review above. We decided to utilize this model in our research because it allows companies that want to innovate their business model which components it must understand (Wirtz et al., 2016).

This was undertaken by a case theory method. A case theory method allows having an in-depth understanding of how actors are using and developing the Blockchain technology. (Gummesson, 2017). The case study method is relevant when the researcher wishes to collect contextual expertise about a phenomenon (Flyvbjerg, 2001) and when the boundaries of the phenomenon are not very clear (Yin, 2003).

We followed a qualitative research approach, pursuing deep, detailed, and rich data collections to explicate complex issues and advance extant knowledge (Dubois and Gadde 2002; Gummesson 2005).

The methodology can be summarised as follows:

- a) selection business cases;
- b) identification of items and construction of the interview;
- c) data collection;
- d) analysis of results.

3.1 Data collection and analysis

We conducted (14) interviews with enterprise that are part of Italia4Blockchain (as listed in Table 3). In these interviews, the questions are focused on the implications of the use of blockchain technology by companies (eg. "Where did the need to implement with Blockchain technology come from?", "How has the business model of companies implementing blockchain solutions changed?", "What were the difficulties in the implementation phase?", "What were the results you have achieved to date?", "What were the negative aspects you encountered?")

In detail, this analysis focused on the functionalities of the blockchain technology, the managerial implications connected new processes and business models.

Each interview lasted about 30-60 min. The interviews were recorded, listened to, and reflected on by both researchers independently. Additional data collections also include the collection of reports and documents to support a preliminary study of the companies interviewed. The researchers read the results several times and had multiple discussions to elaborate on their observations.

Finally, our results were organized according to the three main components of the integrated business model (Wirtz et al., 2016).

Table 3. Summary of interviews

	Interviewer role	Description	Date and Duration
1	Chief Executive Officer (CEO) of Charity Wall	Through the blockchain, the company certifies the imaginary of donations and access to donors to monitor, comment and constantly verify the development of each specific social project. BUSINESS AREA: Donations	10/10/2019 - 45 min
2	Cybersecurity, Developer, Problem Solver of Team Bit	The company that develops technological solutions based on blockchains that go and activate cryptocurrency training services. BUSINESS AREA: Financial services and cultural area	16/10/2019 - 60 min
3	a) Co-Founder & CEO of Adamantic	Blockchain solution project, for data certification and digital asset management and software development. BUSINESS AREA: Fintech	17/10/2019 - 30 min
4	The sole director of Alps Blockchain	The company offers research and development of new technologies in mining and blockchain. BUSINESS AREA: Cryptocurrency	18/10/2019 - 40 min

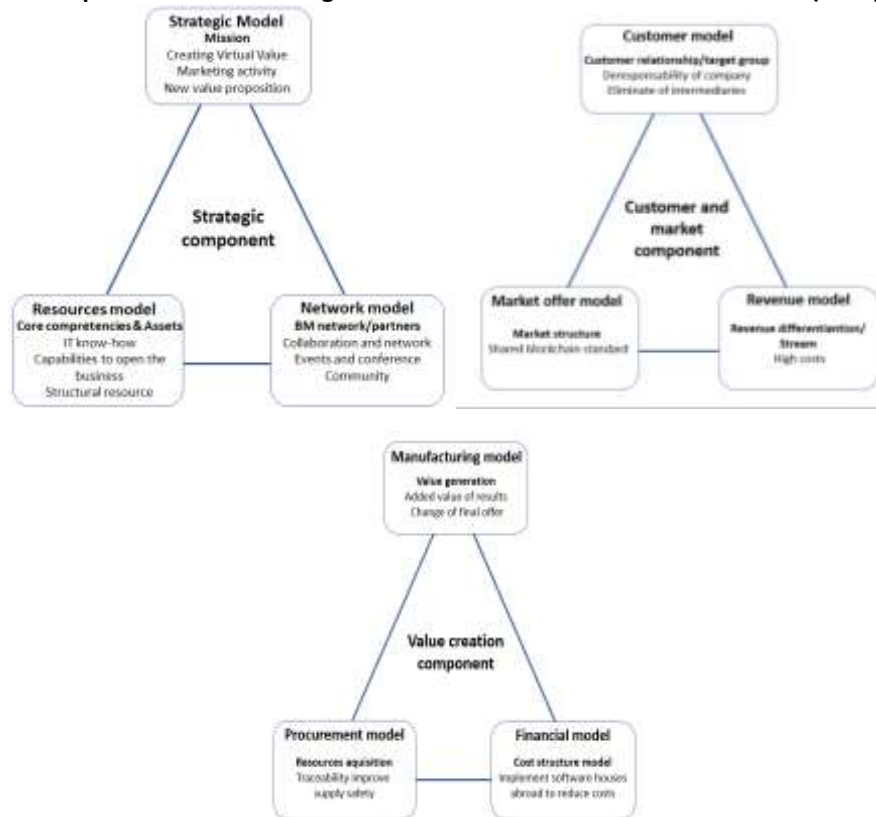
5	Blockchain Developer of Banco Digitale Firenze	The company defines new business solutions for the blockchain and has created platforms for managing cryptocurrencies. BUSINESS AREA: Health sector and monetary / fintech sector	25/10/2019 - 35 min
6	Blockchain Specialist and Project Manager of Consulcesi Tech	The company has dealt with cryptocurrencies and bitcoin-related technologies. Another application in the health sector regarding the management of clinical data. BUSINESS AREA: Cryptocurrency, Health sector and monetary / fintech sector	30/10/2019 - 60 min
7	Managing Partner Life Data (Your Target)	Implement blockchain platforms for payment systems, with software development and loyalty systems for users. BUSINESS AREA: Payment systems and Loyalty systems	31/10/2019 - 45 min
8	Chief Executive Officer of Hooni	The company offers end-to-end services to other companies that want to integrate blockchain into their business models. BUSINESS AREA: Payment systems and cryptocurrency	7/11/2019 - 60 min
9	Co-Founder of Efebria	Implement solutions on production chains and in transactions, to collect data and certify the activity. BUSINESS AREA: Voting and Food sector	11/11/2019 - 30 min
10	Expert in Blockchain and Cybersecurity of PWC	The society offers solutions starting from product development, market analysis and end-to-end support in production. BUSINESS AREA: Crypto asset, financial services, public administration, notarization	14/11/2019 - 40 min
11	The sole director of Bitviking Srl	The company is an international group of companies offering comprehensive solutions and software solution. BUSINESS AREA: Mining, Tokenization, food sector	15/11/2019 - 35 min
12	Chief Executive Officer of Right Chain	Project on copyright management, in which the first interlocutor is the author himself. BUSINESS AREA: Copyright	15/11/2019 - 45 min
13	CEO & Co-Founder of HUULKE	Developers of technological platforms, and implementation of blockchain projects with consultancy to companies in the field of cryptocurrencies. BUSINESS AREA: Financial Services and development	20/11/2019 - 30 min
14	Business Developer of Foodchain	Foodchain puts blockchain technology at your service to digitally track and authenticate food products, making the ecosystem of the supply chain transparent, safe and reliable. BUSINESS AREA: Food	09/12/2019 - 45 min

4. Results and Discussion

Blockchain can be identified as a technology that has changed the business processes of the companies that implemented it. In consideration of the analysis carried out for the companies interviewed, some characteristics of the Blockchain are identified that have led to changes in the business models. A model can be identified (figure 1), which compared with the theoretical background, allowed us to identify how the business model processes have changed for the companies that introduced the Blockchain in their internal processes. Considering the model of Wirtz et al. (2016), we have adapted this model to underline

the implication and changes of three different components: Strategic component, Customer and Market component and Value Creation component.

Figure 1 - Business Model features changes with blockchain
An adapted model of an integrated business model based on Wirtz et al. (2016)



Compared to the analysis, it was found that companies have seized the opportunity offered by this technology, both from the internal point of view of the company and concerning the offer of products and services to the end customer. The areas of application are different, from the financial sector to the health and food sector.

4.1 Blockchain enable new strategic component for the business model

-Strategic Model

Despite the evolution of this technology, the blockchain is still an immature technology, with a market yet to be discovered and without a clear strategic line to follow. Among the companies interviewed, a condition has emerged in which the experimentation of companies is not structured with a strategic assessment of the value or feasibility of the economy, not having a return on investment.

Interest in this technology emerges from companies when the cryptocurrency bubble was created around 2017. It is no coincidence that the application of this technology has been necessary for a long time to create virtual value as bitcoins.

“Need arose when in 2017 there was the cryptocurrency bubble and we had a problem that they had remained false gurus proposing risky investment packages. This is why we have sought to understand what was a safer product in cryptocurrencies (Interview n.4, Sole Director, AlpsBlockchain)”

"The need to experiment with this technology stems from the fact that we started dealing with cryptocurrencies and bitcoin-related technologies in 2015 and we later realized that blockchain technology could be used vertically in other sectors as well (Interview n.6, Blockchain specialist & Project Manager, ConsulcesiTech)"

The identification of the blockchain exclusively with the crypto world has led to ignorance of the actual opportunities offered by the blockchain. In light of this lack of know-how, many companies approach technology with just one mission: to do a marketing activity.

"The problem is the difficulty of a total understanding of technology ... ignorance applies because it is identified only with the world of Bitcoin. Many companies use it exclusively for marketing but no real case (Interview n.7, Managing Partner LifeData, InTarget)"

"Raw answer is marketing. Until two years ago its existence was unknown but as soon as the word bitcoin exploded everyone said 'we need the blockchain', many companies did not understand it but the competitors used it and then used it (Interview n.2, Developer, TeamBit)"

However, the marketing approach pays in the short term but not in the long term. Insight of this, a relevant aspect is a definition of a new value proposition.

"Not seeing any benefit in using the blockchain from a marketing standpoint, companies must look to real use and not for greater benefits. (Interview n.10; Emanuele Coscia, Expert in Blockchain and Cybersecurity)"

The analyzed companies have developed their business models and openings for new entrants, to adapt to the use of the block to the customer's needs. This implies that the disruptive potential of the technology is at the base of new operating models, and its initial impact will be to favor operational efficiency.

"Companies will have to change their business model if they want to take on the opportunities of blockchain technology, opening up the business model and giving more satisfaction to the end customer, as for tokenization and digital identity processes. All this allows to make process efficiency and open up to new business scenarios. (Interview n.6, Erich Fortuni, Blockchain Specialist & Project Manager, Consulcesi Tech) "

The blockchain technology can enable new forms of exchange in various sectors. With the blockchain, trust is placed in the code and not in the intermediaries. In this way, companies can serve customers with greater transparency and generate a profit on distributed trust and control mechanisms.

"There are significant advantages in the approval flows, as ... everything is always traced and uneditable. Manual verification is no longer required. There is a distortion of the business on the one hand, for the de-responsibility as the companies are no longer the guarantor of the transactions (Interview n.3, Pierpaolo Foderà Co-Founder & CEO of Adamantic) "

Network model

Blockchain with its decentralized model transforms business models by creating value in the short term, and acquire value by adopting strategic approaches to strengthen their market positions, focusing on collaboration and networks, setting standards within the community and addressing regulatory barriers.

"If more companies are in the same territory and have to share data, the result is that by implementing a blockchain, trust is greater in data exchange, putting stakes for the bad guys. (Interview No. 5, Edoardo Tommasi, Blockchain developer chief of Banco Digitale Firenze) "

"Being a distributed network it is necessary to establish who works on the network and how open the network is to external actors, which are the roles that the actors cover within the blockchain network and also to make data management choices. (Interview n.6, Erich Fortuni, Blockchain Specialist & Project Manager, Consulcesi Tech)"

The public disclosure that is being carried out on this new technology is fundamental, with the consequent organization of events and conferences. All this allows the exchange of information and knowledge among the leading players in the sector.

"I realized that in this world nothing can be done alone, so I have established a network with companies even with competitors. To do things well you need everyone's help, you need to create an active community where information is exchanged. (Interview n.11, Simone Cirillo, the sole director di Bitviking Srl)"

-Resources model

Blockchain applications and its features are evolving rapidly to interrupt the business ecosystem. The acceptance and success of blockchain structures are based on the trust of the actors in decentralized systems and on their legal and regulatory concerns and technological maturity, security and efficiency.

The complexity of the key aspects of the blockchain provides digitization strategies and creates models that impact on the internal and external resource model that the company controls and has available to build its business model. It is time to start thinking in decentralized structures and to find new market roles or, even better, to redefine the resource ecosystem generated by decentralization, transparency, trust, immutability.

"We need to be ready for a decentralized model, also making a cultural effort. (Interview n.8, Manuel Montanaro - Chief Executive Officer, Hooni) "

"We believe in the strength of the blockchain, like developing new technology and increasing market share. To do this it is necessary to be open to the market, driven by innovation and staff formed from a transversal point of view. (Interview n.13, Matteo Ligari - CEO & Co-Founder, Huulke) "

Of course, to exploit the opportunities of technology, the companies interviewed stated that adequate training and basic technical skills were required, especially when it comes to a constantly evolving technology.

"We believe it is necessary to have a basic competence in technology and an initial feasibility study to assess whether the blockchain solution is suitable for the needs of the company (Interview n.3, Pierpaolo Foderà Co-Founder & CEO, Adamantic)"

"Companies must have skills in various sectors to obtain long-term benefits: information technology, that is the sector's market competence, and once you know the market you need managerial and marketing skills to reach your target. (Interview n.9, Raffaele Nicodemo, Co-Founder, Efebia) "

Furthermore, the implementation of technology requires companies to acquire structural resources (eg suitable infrastructures; machinery) and psychological resources (eg a new organizational culture; openness to innovation).

"Since the third certifying party is no longer an institution or a person but a machine, it is necessary to have a suitable infrastructure. (Interview n.4, Francesco Buffa, Sole Administrator, AlpsBlockchain) "

"To take advantage of blockchain opportunities in the long term, companies must be ready to innovate to be able to follow new practices and operating logic. (Interview n.2, Maurizio Siracusa, Cybersecurityty, Developer & Problem Solver, Team Bit) "

4.2 Blockchain enable new customer and market component for the business model

-Customer model

Many companies have overseen on a large scale the blockchain initiatives they have implemented underline the value of technology as a data-sharing mechanism and complete elimination of intermediaries. Companies must combine operations and activities to implement the technology and create a distributed model in which all the actors have responsibility for the transactions. The implementation of blockchain technology, due to its transparency and immutability characteristics, modifies the companies' customer model. Overall, reference is made to the set of offers relevant to the different customer segments of the business model. Companies, in fact, by exploiting the potential of the blockchain, can provide an efficient and high-quality offer, improving the level of protection and confidentiality of the data of end-users.

"The business model will be implemented giving added value in terms of results. There will certainly be changes in terms of the final offer for the customer. (Interview n.4, Francesco Buffa, Sole Administrator, AlpsBlockchain) "

"The advantages of data management are the most interesting, considering also the security and transparency offered by the Blockchain. Sometimes it happens that you expose more data to the customer, without making too many changes to the business model. (Interview n.5, Edoardo Tommasi, Blockchain developer leader, Banco Digitale Florence) "

In some more complex industries, the presence of numerous intermediaries, guarantors of transactions, introduce inefficiencies. In such cases, especially when it comes to small transactions, the blockchain technology could generate businesses that would be unrealizable in the presence of intermediaries and the consequent costs they generate. The potential of the blockchain makes it possible to create a decentralized structure, eliminating intermediaries and allowing actors to interact more quickly. Blockchain, therefore, eliminates the need for intermediaries to provide tools for secure contact between the service provider and the user.

"The actors interact with each other through a system of authorization registered on Blockchain that makes the process more efficient. The activities carried out are recorded in an unchangeable and independent way. The consumer has an asset that lives permanently on the blockchain. (Interview n.6, Erich Fortuni, Blockchain Specialist & Project Manager, Consulcesi Tech)"

However, although the blockchain offers significant opportunities in terms of transparency and trust for end users, the companies interviewed state that the end consumer is not always involved and does not yet have full awareness of the technology.

"In some cases, the end consumer is not at all involved (blockchain in back end). Yet the end-user is not fully aware of the technology. (Interview n.10, Emanuele Coscia, Expert in Blockchain and Cybersecurity, PWC) "

"Compared to the propaganda towards the final consumer who has not yet fully understood the use and opportunities linked to the blockchain, it still takes 5 years starting from today to have a widespread awareness. (Interview n.7, Oscar Fogliadini, Managing Partner Life Data, InTarget) "

-Revenue model

It's hard to say what the changes that blockchain technology brings to the revenue model. Certainly, by removing intermediaries from existing processes, value flows can be moved by creating new revenues by considering all the actors involved. The blockchain platforms interconnect actors in real-time and transmit data and value securely. In this way, they can help companies reduce data-processing costs, but also create new products and services that can generate significant new revenue streams.

"Reasoning should be done on cost-opportunities, that is to say how much savings if companies manage to solve the problem of information asymmetries, eliminating manual reconciliation activities from actor to actor, these are points of efficiency that do not translate into a diminishing revenue costs and time dedicated to activities and can be invested for value-added activities (Intervista n.6, Erich Fortuni, Blockchain Specialist & Project Manager, Consulcesi Tech)"

However, when it comes to implementing technology, we should first evaluate the costs and possible revenues from adopting a blockchain solution. Companies often do not pay attention to these aspects, simply wanting to carry out a marketing action to attract new customers.

-Market offer model

Blockchain technology can be applied in a series of different areas with different applications and advantages depending on the type of transactions required. However, whatever the scope of application, the blockchain can make transactions safer for customers and to keep track of the history of customer data (eg purchase data). By analyzing customer data, it is possible to make customized offers based on the tastes and needs of customers.

However, it is important to note that the blockchain will affect not only the companies that apply this technology but also those that need to restructure their businesses because the blockchain undermines their offer. The ability to use new technologies to create new innovative business models may be an important source of competitive advantage. With this consideration, the company must consider not only the advantage/value that a customer receives through its business model but also its competitors and the entire market structure.

Most of the companies interviewed state that shortly it will not be possible to arrive at the determination of a single standard, shared among all the actors present in the market. In the field of technology and information technology, it is difficult to arrive at a single standard, as the technology is constantly evolving. They will be able to develop different standards for communicating and specific for different use cases.

"Certainly, shared standards will be developed to communicate with standardized protocols with perhaps more specific standards such as identity, but we cannot speak of a single standard. (Interview n.6, Erich Fortuni, Blockchain Specialist & Project Manager, Consulcesi Tech)"

"For the creation of a standard, in reality, there will be more standards among the various technologies and for different use cases. Among the future opportunities, the turning point is in digital identity, considering the combination of pure decentralization and personal identity management. (Interview n.10, Emanuele Coscia, Expert in Blockchain and Cybersecurity, PWC) "

"We will not come to a shared standard, because each project will have its standard, as the variables involved are different. There will be a minimum of standards, but then they will change depending on the sector. (Interview 11, Simone Cirillo, the sole shareholder of Bitviking Srl)"

4.3 Blockchain enable new value creation model component for the business model

-Manufacturing Model

It is currently difficult to know how companies can exploit business value by implementing the blockchain. Without a clear understanding of how a value creation takes place and a corresponding adaptation of the business to the practices, the realization of the value is destined to failure. To ensure trust between the participants in the value chain, the actors will rely on solid relationships with the other actors of the decentralized system, using blockchain to support the truthfulness of the

transactions a company with another company or between company and customer who can improve customer value. A connected infrastructure is created that allows the parties to interact in real-time and verify transactions and information transmissions. Customers, in this case, are actively participating in the blockchain platform, changing the offer of products and services of companies.

"The blockchain strengthens the company's value chain towards the customer, improving the user experience. (Interview n.9, Raffaele Nicodemo, Co-Founder Efebria)"

The blockchain, therefore, can facilitate upstream and downstream changes in corporate value chains. Furthermore, the technology allows influencing the production processes, shortening them and eliminating third parties. In this way, it allows you to experiment with new business models.

"The third certifying party is no longer an institution or a person but a machine. Documents can no longer be falsified through the blockchain. (Interview n.4, Francesco Buffa, Sole Administrator of AlpsBlockchain) "

A company with the implementation of the blockchain can cement manufacturing processes inside the company, for which, once the blockchain is applied, it leads to zero margins of errors (streamlining of control and monitoring), because I know that the blockchain and process optimization changing business models aimed at optimizing human and financial resources.

-Procurement Model

Blockchain has become a technology that combines the fabric of global B2B transactions. The implications of the blockchain for procurement, the supply chain and supplier management can be extremely significant. Blockchain has the potential to transform all types of digital transactions. A distributed database that contains records that cannot be tampered with leads to an increase in the efficiency of the whole purchasing chain. One of the biggest problems procurement professionals deal with is the lack of trust between them and other organisations. Blockchain can solve this problem.

"To the entire ecosystem of actors, we form the possibility of verifying and comparing the intrinsic quality of the product, and it is possible to trace the data and information shared throughout the production chain. The Foodchain QR codes allow you to access the complete and immutable history of the product to discover its path during all the processing phases (Interview n.14, Davide Redaelli, Business Developer, Foodchain)"

-Financial Model

Blockchains are gaining attention as a new platform technology for financial transactions, offering the benefits of lower intermediation costs with more transaction impartiality and transparency. Their use as a financial transaction platform has the possibility not only to bring about changes in the business models of existing financial services but also to create new financial services and businesses. The power of eliminating intermediaries is the ability to lower transaction costs and take back control from powerful financial intermediaries. An organization may evaluate whether it wants to take advantage of these properties for creating a new strategic and value model. If it proves valuable, the companies can create a new system or make use of existing systems.

"We have created a mine-firm, that is, a planet where machines are set up to do mining operations. The operation was carried out outside Italy for an energy discourse, and to have less rigidity in fixed costs by implementing a series of partnership and outsourcing some processes (Interview n. 11, Simone Cirillo, Sole Director, Bitviking Srl)".

5. Conclusion

Many companies are adopting blockchain technologies for their businesses. The features of blockchain have certainly changed the way the companies perceive problems and solve them. Each company interviewed create own business models which suit their business needs. A blockchain business model is decentralized, allows peer-to-peer transactions, and helps create a trusted network. The feature of decentralization of a blockchain changes the way a company handles the flow of transactions, the change of entities, the profits and the maintenance of growth during the change. Blockchain business models help improve businesses and benefit end-users. A good business model must focus on all entities on investors and not only on entrepreneurs.

The blockchain business ideas presented by managers must work effectively both at the macro and micro level, for the benefit of employees and end-users. There are still many companies on the Italian territory that follow the traditional business model, without making any changes following the implementation of the technology. Companies are not so ready to move to a completely decentralized business model, as there is still no trust between the parties. This is especially seen in those still immature sectors that are afraid of a tariff in an investment in the blockchain. The added value compared to the introduction of this technology is detected precisely in the involvement of all the players in the business model and the provision of services. The lack of common standards and clearly defined regulations is a number one limitation on the blockchain. Definition of a common standard can be created only for some sectors, or the same standard for sectors that have the same internal processes. Blockchain has enormous potential in generating a network and an ecosystem bringing numerous benefits. However, the Italian territory is still very immature in generating considerable revenues deriving from the implementation of this technology. You can start with the change of internal processes, up to a radical change in the business model.

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