BUSINESS MODELS AND BLOCKCHAIN: 
WHAT CAN CHANGE?

Emergent Research Forum (ERF)

Fernanda da Silva Momo  
UFRGS  
fernanda.smomo@gmail.com

Giovana Sordi Schiavi  
UFRGS  
giovanaschiavi@hotmail.com

Ariel Behr  
UFRGS  
ariel.behr@ufrgs.br

Abstract

In this research-in-progress, we explored Blockchain and its application possibilities in different Business Models. Through a qualitative and descriptive research, we sought, in the Crushbase database, the companies that had in their activity description the word Blockchain, obtaining 810 companies. We tabulate the data obtained in Excel spreadsheet and we collected additional information on the websites of the organizations. The process of data analysis used the document analysis and content analysis techniques. Thus, this study contribute to the characterization of innovative business models related to Blockchain, helping professionals and entrepreneurs to understand this new niche of expertise that comes with the Blockchain. Future explorations should intend to explore more deeply the business models of companies that were already operating before 2008 and to categorize the operation areas of the database organizations in order to contribute to the theory by presenting empirical evidence of active business with that technology.

Keywords

Business Models, Blockchain, Disruptive Technology

Introduction

The Blockchain emerged as a solution for the elimination of the middleman to financial transactions (Nakamoto, 2008). Conceptually it is possible to understand the Blockchain as a database that has as its essential characteristic decentralization, security (encryption), reliability, automation and publicity of information. In this context, it appears that the Blockchain has emerged as a "disruptive innovation with a wide range of applications, potentially able to redesign our interactions in business, in politics and in society in General" (Atzori, 2015, p. 1). In this sense, focusing on the business field, Cohen, Amorós and Lundy (2017) highlight that entrepreneurs are applying the Blockchain technology to solve different problems in industries of various segments, that fact has been modifying the business models and perturbing the established models. However, it is not enough to just explore these disruptive technologies without proper (re)structuring of business models to explore properly this technological and innovational potential (Hwang & Christensen, 2008). Thus, Byrnes (2017) points out that the larger strategic intelligence today "are those that combine a high level of technological innovation with a business model".

That way, every company that provides a particular service or product based on a relationship of trust between buyer and seller is vulnerable to impact provided by Blockchain in business, not only for market disruption, but also by offering new opportunities to creating value in an appropriate business model to explore this technology (Cohen et al., 2017). Thereby, in view of the relevance of the subject to the current business context, this article seeks to answer the following research problem: What are the characteristics of the business models that use the Blockchain? Considering the aspects presented in the question above, this study attempts to identify the characteristics of innovative business models using Blockchain technology. To do so, the areas of expertise of these innovative models will be analyzed, as well as general descriptions of these organizations will be presented.

To do so, by means of an essentially qualitative and descriptive research we sought, in Crushbase databases, for all companies listed in this repository that had, in their activity description, the word Blockchain. In this quest, 815 firms were mapped for analysis, but only 810 enterprises have entered the search scope since 5 companies had already closed its activities. In addition, to supplement this information, other documents of these companies were collected at their respective websites to help with this investigation. Finally, for the data analysis
Innovative Business Models and Disruptive Technologies

The research on business strategies related to the structures of the business models have become significant around the 1990 with the advent of the internet. However, in the last two decades, studies on business models have intensified and taken different directions (Taran, Nielsen, Montemari, Thonsen, & Paolone, 2016), including work on innovation in business models, being the studies focus of many academics and managers (Chesbrough, 2010). This attention to the innovation of business models is a direct reaction to increased competitiveness and to constant changes in the market and consumer demands (Pereira, Imbrizi, Freitas, & Alvarenga, 2015).

On that basis, the revision of Taran et al. (2016) points out that the innovation of business models can be caused by a reaction to external changes, a process oriented to discoveries, of a continuous learning process of the Organization and the environment, or an evolutive process. Although there are these different approaches as to the motivations for innovations in business models, it should be noted that the search for new business models considers, in all cases, the needs of customers (Magretta, 2002), seeking new forms of value proposition through the reorganization of the business structures (Bashir, Yousaf, & Verma, 2016). In this sense, there has been, in recent years, the success of market expressed not by the introduction of new products or services individually, but rather by innovation of business models (Taran et al., 2016). This is confirmed, for example, with the presence of the ‘Uberization’ phenomenon in the current market (Bashir et al., 2016). This term refers to the innovative business model released by the Uber company that has impacted the taxi industry - so far established - by proposing a personal transport service with a differentiated value proposition to their customers, making intensive use of technologies. Such a term is used currently to represent other companies that are innovating in their business models in the most different areas, according to the proposal submitted by Uber. Thereby, the innovation of business models by the introduction of new technologies (especially disruptive technologies) is highlighted in the management field and in literature (Sainio, 2004), since business structures are altered by the presence of these emerging technologies, creating innovative models and pressing the existing models (Cavalcante, 2013), being this focus of this research.

However, it should be noted that the adoption of a new technology does not presuppose the creation of a market disturbance or strategic relevance for organizations (Bower & Christensen, 1995); Therefore, not all emerging technology can be considered disruptive. On that account, it is important that organizations can identify the potential disruption of a technology so they can prioritize investments in technologies that have a higher probability of impacting the market and, thus, achieve a competitive differential (Sainio, 2004). Thereby, the disruptive impact on the market focuses mainly on discontinuation of the normal course of a process and on the interruption of established performance trajectories (Christensen, 1997). In this direction, according to Danneels (2004, p. 249), the disruptive technology is understood as “a technology that changes the basis of competition, changing performance metrics along which firms compete”. In this sense, the discussion of the concept of disruptive technology, to the market, it has a profound effect on the way in which it's addressed the technological competition, leading to a reevaluation in the way companies approach to these technological threats and opportunities (Sainio, 2004). In this context, the role of disruptive technology can be noticed in the construction of new groups of products, services and processes, enabling the attainment of competitive advantage, since such technology cause changes in business structures, provide improvements in performance of organizations and bring a new value proposition to the market (Lui, Ngai, & Lo, 2016; Sainio, 2004).

Blockchain

The Blockchain is a technology that emerge in 2008 from the publication of the report “Bitcoin: Peer-to-Peer Electronic Cash System”, published by the Cryptographic Mailing List (Frechet, 2017). In this report, considering that the “Internet commerce began to depend, almost exclusively, upon financial institutions that serve as trusted third parties to process electronic payments”, Nakamoto (2008, p. 1) highlighted as necessary the development of a “ electronic payment system based on cryptographic proof instead of trust” to allow “any two parties willing to negotiate directly with each other without the need for a trusted third one”. Therefore, the Blockchain came up with the goal of developing a technology that allows the exclusion of the intermediary agent of financial transactions. In more detail, the Blockchain can be understood as a distributed and shared database, based on encryption to ensure the authenticity of information that allowed “for the first time, people not related to reach a consensus on the occurrence of a particular transaction or event without a need for control authority” (Wright & De Filipe, 2015, p. 2).
So, in Blockchain, all transactions are recorded in a block that is visible to the network participants who review and validate this transaction that, when validated, is connected to its predecessor thus creating a chain of blocks (Yli-Huumo, Ko, Choi, Park, & Smolander, 2016). Therefore, the way of registration is provided from a public, distributed and transparent (Tsai, Blower, Zhu & Yu, 2016) chain of hashes of digital signatures (Lemieux, 2016). In this way, the components of the Blockchain make impossible to change any information without changing the entire chain and therefore the legitimacy of this technology is not only in the references to the previous block, but on all transactions performed (Tsai et al., 2016; Yli-Huumo et al., 2016).

Finally, since Blockchain is not restricted to Bitcoin, it’s worth mentioning the potential use of this technology. In this sense, Swan (2015) identifies a strong possibility of use of this technology in order to involve various fields of knowledge besides financial. Therefore, in view of the concept, characteristic and potential applications it is understandable why many consider it as the business internet. Furthermore, more directly, the decentralization stands out, according to Wright and De Filippi (2015), it can affect, on its way to operate, Governments, organizations, and society in general.

Method

Considering that from this research we seek to identify the characteristics of innovative business models using Blockchain technology, a qualitative and descriptive research has been carried out, operationalized by documentary collection and analysis, besides analysis of content. The data were collected from the Crushbase database, international repository, founded to be the main record of the most innovative companies in the world. It has business information about more than 100,000 global companies (not limited to startups) (Crushbase, 2017), and complemented with documents collection on companies websites and in social networks like Linkedin. In Crushbase we carried out a search for all companies that had in theirs activity description the word Blockchain. In this quest, we have found a total of 815 companies that had their data extracted from Crushbase, on October 21th, 2017, from a .csv file that was treated and transformed into an Excel spreadsheet. In this initial treatment of the database, 4 companies that had already closed its activities were excluded. So, we analyzed the data of 810 companies in this study using documentary analysis techniques.

Accordingly, to define the analytical perspective in relation to disruptive business models using Blockchain technology, we used the LSA (Latent Semantic Analysis) technique which was complemented by the Content Analysis (Kulkarni, Apte, & Evangelopoulos, 2014). This is because the LSA enables the discovery of a latent semantic structure hidden between the terms present in documents that constitute a larger set of documents (Visinescu & Evangelopoulos, 2014). So, for this definition we collected, from a systematic search, 19 articles that had in their titles or summary the term ‘disruptive business model’ and were in the following databases: CAPES/MEC Scientific Journals, EBSCO, SCOPUS and Web of Science. From that, with the LSA technique we highlighted the most relevant dimensions in the collected texts set. While the Content Analysis allowed us to give these dimensions meaning, resulting in three prospects for data analysis of this article with regard to disruptive business models: Disruptive Technology and Innovation (the way of use of disruptive technology, in the case of this study, the Blockchain); Customer Value Proposition (how the business changes your client’s life from your product/service and how technology is related to this value proposition); Business Models’ Maintenance Logic (how companies in the same segment are seeing they need to pay attention to new technology that provides a business model disruption).

Preliminary Results

The first analyzes allow to expose the characteristics concerning the database used for this study. In this sense, initially, we analyzed the amount of companies founded by year highlighting, on Figure 1, that chronology as well as the publication year of the article by Nakamoto (2008), which gave rise to Blockchain technology. In relation to the results obtained in this analysis, most companies that mention Blockchain technology in their description were founded since 2014. Furthermore, we observed that 10 organizations listed in the database have been created by the year 2008 (Figure 1). This fact deserves particular attention as it comes from companies that were already in operation and, from the emergence of a new technology, changed their business model in any way to use or offer products or services related to Blockchain technology. Therefore, Figure 1 outlines a timeline of the companies created until 2008 and, then further analysis in relation to the business models of these organizations.
Therefore, Figure 1 outlines a timeline of the companies created until 2008 and, then we analyzed the business models of these organizations under 3 major perspectives that characterize the way of structuring of business models: Disruptive Technologies and Innovation, customer value proposition and logic of business models. Regarding the first perspective, seeking to characterize the form of disruptive technology, most companies examined focus on the development of applications using the Blockchain technology, that is, the Blockchain technology in these companies can be seen as an end product. Only 3 companies use the Blockchain activity is half and 1 uses the Blockchain as much as like end product activity. On the second perspective, which relates how the business meets the needs of the customer and solves their problems from the product/service offered, the use of Blockchain technology, as a means or as an end, adds value in what the customer receives, especially in relation to issues such as security and confidence. Finally, the third perspective, which addresses how companies pay attention to new incoming technologies on the market, as well as on the impact of these emerging technologies in business models, companies are aligned to this innovative behavior and enterprising, adopting such conduct in their business.

In addition to analyzing the date of foundation of the organizations that constitute the database and the analysis of organizations founded prior to 2008, we also identified the geographical position of these organizations. With respect to it, the 810 companies that make up the sample of this study are spread over 58 countries on 4 of the 5 continents. It is important to stress that it has not been possible to identify the origin of 263 organizations (uninformed). This information is more detailed in Figure 2.

It should be noted from Figure 6 that the northern hemisphere has a greater amount of companies when compared with the southern hemisphere. Regarding the continents in which are located the organizations, the American continent comes out ahead in amount of companies, which is achieved by the large amount of companies located in North America. So, after this continent, there are Europe (190 organizations), Asia (75), Oceania (13) and Africa (5). Finally, we highlight that the United States is the country with the largest concentration of companies (224 organizations).

**Considerations**

Through these analyses, the present research contributes to the characterization of innovative business models related to Blockchain, helping professionals and entrepreneurs to understand this new niche of expertise that comes with the Blockchain. In addition, this review on companies operating with Blockchain contributes to the theory by presenting empirical evidence of active business with that technology and how it contributing to the various business areas. Regarding the limitations of research, we highlight the analyses presented here are limited to a timeframe for data collection and companies that were listed in a specific database, the Crunchbase.
In addition, there was some information that has not been possible to obtain and ended up being classified in the analyses as ‘uninformed’.

Finally, the discussion of this subject shows the emergence of Blockchain technology, both in the academic and professional fields, revealing the importance of research on this topic. Thus, the future explorations intend to explore more deeply the business models of companies that were already operating before 2008 and to categorize the areas of operation of the database organizations. Therefore, considering the recent emerge of business that operate with Blockchain, the empiric analysis of business structures that are impacted by the Blockchain disruption reveal important insights about business management which work with that technology. Moreover, a deep analysis with members of companies that use Blockchain can be valuable to an understanding of the benefits and challenges this technology brings in specific economic environments.

References


