

Business Model Canvas: A Bibliometric Analysis of Published Literatures using R

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ABSTRACT

This study presents a bibliometric analysis on the publications of Business Model Canvas research from Scopus database between 2012 to July 2021. The publication trend is on the rise and anticipated to continue to rise due to the COVID-19 pandemic that requires creative, precise and dynamic business modelling approaches. Based on keywords used, , the study retrieved 116 documents and analyze the data using various tools. This presented potential researchers with a wide opportunity to publish on recent issue regarding Business Model Canvas during the pandemic and post-pandemic period in SCOPUS publications. Issues pertinent to triple layered business model, IR 4.0 and the post pandemic business model and strategy can be seen as interesting areas to venture in terms of publication opportunities.

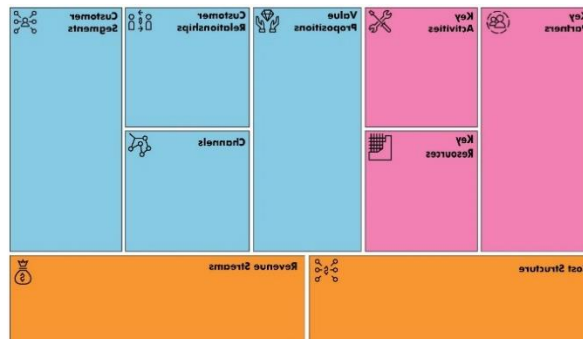
Keywords: BMC; Business Model Canvas; Bibliometric; Business Strategy

INTRODUCTION

Business modelling is a strategic activity that promotes innovation with overarching business strategy (Carter & Carter, 2020). Business Model Canvas is a method of analyzing, designing, strategizing and testing a business model based on nine business areas (Ariffin & Hamidon, 2017). It describes the rationale of how an organization creates, delivers and captures value. This model is preferred by the practitioners especially in the

developing countries because the examples are illustrated pictorially supplemented by exercises and workshop scenarios (Oliveira & Ferreira, 2011). There are nine building blocks in a Business Model Canvas as described in Figure 1; Customer Segment, Value Propositions, Channels, Customer Relationships, Revenue Streams, Key Resources, Key Activities, Key Partnerships and Cost Structure (Martin, 2019). One of the reasons BMC was created was due to the need of a business model concept that everybody understands: one that facilitates descriptions and discussion (Ching & Fauvel, 2013). BMC has been developed within the paradigm of lean production where it is a special management approach focused on the regular identification and elimination of losses, setting the production processes of the client-oriented equality (Dudin, Lyasnikov, Leont'eva, Reshetov, & Sidorenko, 2015). By using the Business Model Canvas, the organization can plan their activities depending on the internal and external factors, the strength of the model, and the direction of the management (Nikolaevich, Kutsuri, Fedorova, Dzusova, & Namitulina, 2015). It is commonly used by the entrepreneur in order to organize their assumptions prior to embarking into a new business venture (Ladd, 2018).

Figure 1: Business Model Canvas



Source: <https://www.thestrategygroup.com.au/business-model-canvas/>

Table 1 summarizes the 9 BMC building blocks. BMC starts from identifying the customer segment. It emphasizes on the notion that an organization should be able to identify one or several customer segments. This exercise will help the organization to understand which customer segments bring the most revenue to the organization. From the customer segments, then it moves to value propositions where an organization should seek to solve customer problems and satisfy the customer needs through providing values bundled with its products or services. After the value

propositions have been identified, organizations have to focus on ways to deliver the values to the customers. Values can be delivered through communication, distribution and sales channels. After identifying the right channels for the right customers, organization can start building and maintaining relationship with each customer segment.

Table 1: Business Model Canvas Building Blocks

Buildings Blocks	Descriptions	Questions
Customer Segments	Different groups of people or organizations an enterprise aims to reach and serve	<ol style="list-style-type: none"> 1. Which classes are you creating values for? 2. Who are your most important customers?
Value Propositions	The bundle of products and services that create value for a specific Customer Segments	<ol style="list-style-type: none"> 1. What core values do you deliver to the customers? 2. Which customers' needs are you satisfying?
Channels	How a company communicates with and reaches its Customer Segments to deliver a Value Proposition	<ol style="list-style-type: none"> 1. Through which channels do your customers want to be reached? 2. Which channels work best? 3. How much do they cost? 4. How can they be integrated into your and your customers' routine?
Customer Relationships	The types of relationships a company establishes with specific Customer Segments	<ol style="list-style-type: none"> 1. What kind of relationship does the target customers expect you to establish? 2. How can you integrate that into your business in terms of cost and format?
Key Partnerships	The network of suppliers and partners that make the business model work	<ol style="list-style-type: none"> 1. Who are the key partners/suppliers? 2. What are the motivations for the partnership?
Key Activities	The most important things a company must do to make its business model work	<ol style="list-style-type: none"> 1. What key activities does your value proposition require? 2. What activities are the most important in distribution channels,

		customer relationship dan revenue streams?
Key Resources	The most important assets required to make a business model work	<ol style="list-style-type: none"> 1. What key resources does your value proposition require? 2. What resources are the most important in distribution channels, customer relationship and revenue stream?
Cost Structure	All costs incurred to operate a business model	<ol style="list-style-type: none"> 1. What costs the most in your business? 2. Which key resources/activities are the most expensive?
Revenue Stream	The cash a company generates from each Customer Segment	<ol style="list-style-type: none"> 1. What is the value that your customers are willing to pay? 2. What and how do they recently pay? 3. How would they prefer to pay? 4. What kind of activities and services that you offer that generate income for your company?

Source: Osterwalder & Pigneur (2010)

Sometimes organization does not have a clue on types of resources they have or need in order to satisfy their customer needs. Identifying key resources is one of the important elements in BMC. In addition, by identifying key activities involved, resources can be utilized at an optimum level. Realizing that some activities are outsourced, and some resources are acquired outside of the organization, BMC has included the element of Key Partnership to specifically address these issues. The last building block in BMC is Cost Structure. It calculates all the cost involved in the organization.

The concept of business model canvas is tailored for managing the strategic sustainable and competitive development of the enterprise structure (Dudin, Lyasnikov, Leonteva, Reshetov, & Sidorenko, 2015). It explains the relationship between the organizations and the customers as well as their partners (Umar, Sasongko, Aguzman, & Sugiharto, 2108). Business canvas

alone cannot guarantee to become a strong competitor in the market. It has to be paired with a strategic analysis (Turko, 2016). Sort and Nielsen (2018) suggested that business model canvas can alleviate the informational and communication challenges between entrepreneurs and business angels.

Bibliometric analysis method also called scientometrics is part of the research evaluation methodology from a variety of literature that has been widely produced, allows the implementation of bibliometric analysis using its own methods (Ellegaard & Wallin, 2015). The bibliometric method is a method of measuring the literature by using a statistical approach that includes the application of quantitative analysis (Thomson Reuters, 2008). It is defined as the use of statistical methods to analyze the bibliometric publications data such as peer-reviewed journal articles, books, conference proceedings, periodicals, reviews, reports, and related documents (Kulakli, 2021). It has been widely used to present the relations of research domains with quantitative methods. Research using bibliometric methods can reveal the fact that there are very few research results that are not cited after several years, given that citations reflect the impact of research that has been done, the results show that these journals have worked well in selecting research results that meaningful, therefore it is expected that researchers consider this characteristic into their research (López-Robles, J.-R., Otegi-Olaso, & Gamboa-Rosales, 2019). Research using bibliometric methods, its scope can analyze parts or topics of bibliography (metadata), such as analyzing citations (IF), publishing trends, author collaboration, agency collaboration, trend in title selections, , trend in author keywords, , trends in the field of study, journals and publishers (Bellis, 2009). It is also considered as a numerical analysis of the publications produced by individuals or institutions in a certain period and in a certain region and the relations between these publications (Şengüllendi, 2020).

Pritchard (1969) used the word "bibliometrics" to describe the application of mathematical and statistical methodologies to books and other forms of communication medium. In the same year, Nalimov and Mulchenko (1969) also introduced the term 'scientometrics' which defined science as a quantitative application related to the analysis of science as an information process. There is a difference in the focus of bibliometrics with science, i.e. bibliometrics are designed to address more general information processes such as books, articles and other materials, while science examines knowledge limited to the measurement of science communication while. According to The British Standard Institution, bibliometric methods are

defined as the determination of mathematical and statistical methods through the use of documents and patterns of a publication (Basuki, 2002). Gingras proposed that a well-constructed bibliometric indicator should incorporate the elements of adequacy, sensitivity, and homogeneity (Norris, 2019).

Previous Studies

Even though there is abundance of bibliometric studies in the area, the author did not find any research that strikes the topic right on the spot. All of the previous bibliometrics research are focusing on the area of business model or innovations in business modelling. Some researchers suggested that the study itself need further work on the innovation aspect of the field (Yahaya, Senin, Yusuf, Khatib, & Sabo, 2020). Cuc (2019) identifies 5 main research trends on the topic: Business Model Innovation and Sustainability, Emerging Digital Technologies, Manufacturing and Industry 4.0, Social Entrepreneurship, and Theory development. The number of studies on this area particularly focusing in the United States has increased over time (Ceretta, Ries, & Rocha, 2016). Maucuer & Renaud (2019) suggested that there is homogeneity in the research area on strategic management and innovation.

MATERIALS AND METHODS

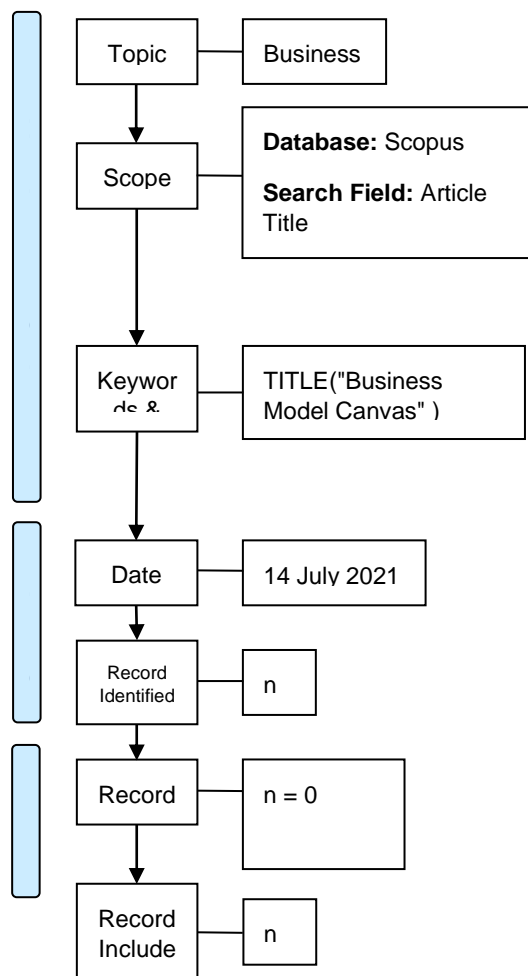
Data Source and Search Strategy

A Bibliometrics analysis using R-Studio software was performed using the Scopus database as of July 2021. Bibliometrics analysis was used because it can be further extended to provide support in recognizing trends (Ball & Tunger, 2006). This research uses R because it is a language for statistical computing that follows a classical bibliometric workflow (Aria & Cuccurullo, 2017). The researchers used the search term 'Business Model Canvas' contained only in the title of the article. The term was used to search for relevant articles published related to research on Business Model Canvas. The researcher focused on the title of the articles because it is the first element that will attract the readers to the article (Annesley, 2010). The publishing year was on a period of 10 year between 2012 to 2021 due to the research's intention to observe the overall literature pattern for the theme.

Information Extraction

Our research methodology strategy is illustrated in Figure 2. All the documents were subjected to the Bibliometrics analysis. The researchers used (i) R-Studio software to calculate the citation metrics; (ii) Microsoft Excel 2013 to calculate the frequencies and percentage of the published materials and to generate relevant charts, tables and graphs; and (iii) VOSviewer (version 1.6.16) to generate and visualize the bibliometrics networks.

Figure 2: Flow Diagram of the Search Strategy



Source: Zakaria, Ahmi, Ahmad, & Othman (2021)

ANALYSIS AND RESULTS

Descriptive analysis

Table 2 summarizes all the main information regarding the articles related to this search query. A total of 116 documents were extracted from the Scopus database based on the document type and source type. The document types consist of articles, book, book chapter, conference paper, and notes. The researcher has limited the search to the latest 10 years (2012-2021). Original articles accounted for forty four percent of the total document published followed by book chapter, conference paper and note at two percent, fifty three percent and one percent respectively. The average year from publication is 3.39 years while the average citation per documents is 7.828. The documents were cited on average 1.517 times per year. All in all, there were 324 authors with 366 times of appearance during the 10 year period. Out of the 324 authors, 3 percent were the authors of single-authored documents while the rest are the authors of multi-authored documents. On average, there are 2.79 authors per document while the number for documents per author is 0.358. Furthermore, there are 3.16 co-authors per document with a collaboration index of 2.96.

Table 2: Main Information Regarding Articles

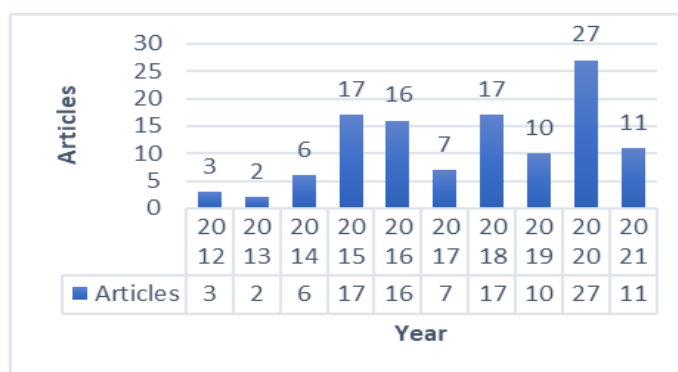
Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2012:2021
Documents	116
Average years from publication	3.39
Average citations per documents	7.828
Average citations per year per doc	1.517
References	1
DOCUMENT TYPES	
Article	51
Book chapter	2
Conference paper	62
Note	1
DOCUMENT CONTENTS	
Keywords Plus (ID)	0
Author's Keywords (DE)	0

AUTHORS	
Authors	324
Author Appearances	366
Authors of single-authored documents	10
Authors of multi-authored documents	314
AUTHORS COLLABORATION	
Single-authored documents	10
Documents per Author	0.358
Authors per Document	2.79
Co-Authors per Documents	3.16
Collaboration Index	2.96

Growth of Publications

Figure 3 illustrates the annual publication trends of all articles from 2012 to July 2021. The publication trends are dynamic for the past 10 years. From 2012 to 2015, the publication trend was decreasing from 3 documents in 2012 to 2 documents in 2013. In 2014, there were 6 documents published under the title Business Model Canvas and it increased to 17 documents in 2015. However, in 2016, the number of publications dropped to 16 documents. For 2021, up until July, there are 11 documents published under this topic. The highest productivity was observed in 2020 with 27 published articles.

Figure 3: Annual Publication Trends



Authorship and Productivity

The most productive author is Borbinha J. with 5 publications. This is followed by Da Silva MM and Bhmann T at 3 publications for the period of study. The remaining top 7 authors are Antunes G, Bakhshandeh M, Bunyamin A, Caetano A, Dudin MN, Fielt E, and Fritscher B with 2 publications each as illustrated in Figure 4. In terms of total citation during the observed period, Bhmann T recorded the highest total citation at 60 citations followed by Dudin MN and Borbinha J at 41 and 36 citations each.

Authors with minimum number of publications of 2 documents and a minimum total citation of 4 were visualized using VOSviewer software and are presented in Figure 5. The network visualization map includes 7 circles, each representing one author. These 7 authors are divided into two main clusters. Closed circles showed active authors of close research alliances.

Figure 4: Author Production over Time

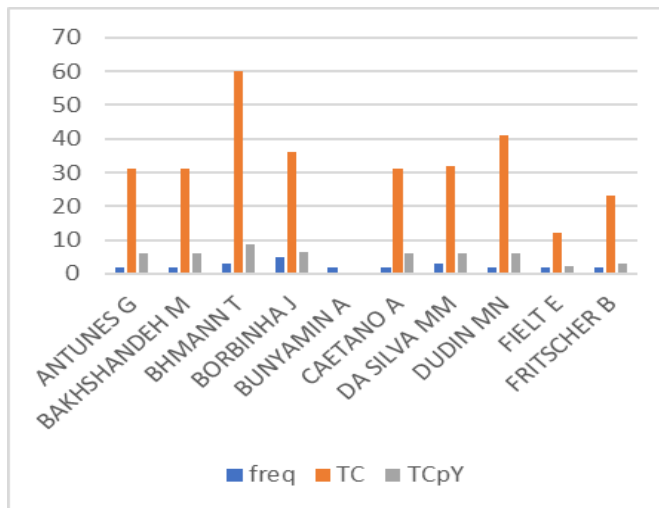
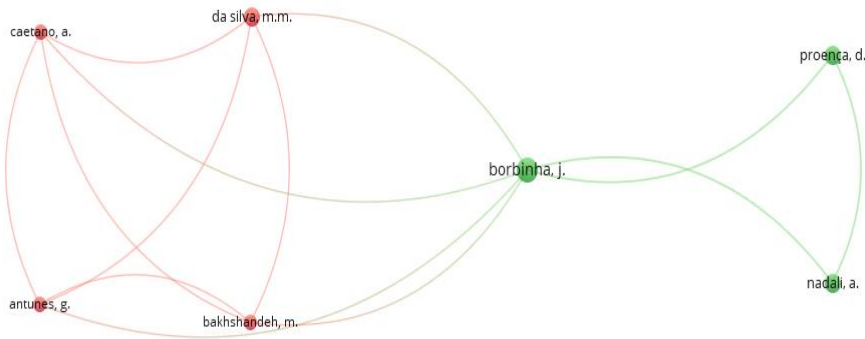


Figure 5: Network Visualization Map of Coauthorship in Business Model Canvas Research



Preferred Journals and Frequently Used Keywords

Table 3 lists the top 10 publications on Business Model Canvas research. At the top of the table are International Journal of Entrepreneurship and IOP Conference Series: Earth and Environmental Science at 4 articles each. Followed by IOP Conference Series: Material Science and Engineering, Journal of Cleaner Production, Journal of Research in Marketing and Entrepreneurship, and Sustainability (Switzerland) at 2 articles each. Table 4 list the top 10 most used keywords in their documents. Business model (133) ranks first followed by model canvas (122), business models (10), and business development (6). Keywords such as male, female, qualitative research, and uncertainty appears 6 time each, while keywords such as adult and decision making appears twice each.

Table 3: Most Preferred Publications

Sources	Articles
International Journal of Entrepreneurship	4
IOP Conference Series: Earth and Environmental Science	4
IOP Conference Series: Materials Science and Engineering	3
Journal Of Cleaner Production	3
Journal Of Research in Marketing and Entrepreneurship	3

Sustainability (Switzerland)	3
2016 International Conference on Engineering Technology And Innovation/IEEE International Technology Management Conference ICE/ITMC 2016 - Proceedings	2
Asian Social Science	2
BMSD2015 - Proceedings of the 5th International Symposium on Business Modeling and Software Design	2
IFIP Advances in Information and Communication Technology	2
Journal Of Physics: Conference Series	2
Lecture Notes in Business Information Processing	2
Proceedings - 17th IEEE Conference on Business Informatics CBI 2015	2
Proceedings Of International Design Conference Design	2
Proceedings Of the Annual Hawaii International Conference on System Sciences	2
2015 10th Colombian Computing Conference 10ccc 2015	1
2015 4th IEEE International Conference on Advanced Logistics and Transport IEEE ICALT 2015	1
2017 4th International Conference on Industrial Engineering and Applications ICIEA 2017	1
2017 International Conference on Information Technology Systems and Innovation ICITSI 2017 - Proceedings	1
2020 2nd International Conference on Cybernetics and Intelligent System ICORIS 2020	1

Table 4: Most Relevant Keywords

Most Frequent Word	
Words	Occurrences
Business Model	133
Model Canvas	122
Business Models	10
Business Development	6
Triple Layered	6
Layered Business	5
Service Business	5
Canvas Approach	4
Canvas BMC	4
Canvas Perspective	3

DISCUSSION

To date, there are few bibliometric studies on Business Model and Innovation research. None of them touch directly on the issue of the study which is on Business Model Canvas even though it is a part of business model and innovation. Even though this area of research has been widely explored, the number of articles in SCOPUS publication since 2012 up until July 2021 is merely 116. The publication trend is on the rise since 2020 and expected to grow further if taking COVID-19 pandemic as one of the pertinent issues that need to be further explored. This presented potential researchers with a wide opportunity to publish on recent issue regarding Business Model Canvas during the pandemic and post-pandemic period in SCOPUS publications. Issues pertinent to triple layered business model, IR 4.0 and the post pandemic business model and strategy can be seen as interesting areas to venture in terms of publication opportunities.

There are few limitations to this study. First, the data presented are limited to Scopus publications database. The richness of data can be derived if this study includes other databases such as WoS, PubMed and Google Scholar. A comparative study on bibliometric analysis can be done using each database. Second, the data being study were up until July 2021 and new research are being published every day. Third, the citation count only shows the frequency of occurrences and it does not reflect the quality of the publication.

CONCLUSION

Business model innovation is one of the interesting topics especially in the field of entrepreneurship and strategic management. The volume of publications for the past decade has seen its ups and downs. More research are anticipated to emerge in the next 5 years due to the intervention if the COVID-19 pandemic which has disrupted mainstream business models and strategies. Furthermore, with the advancement phase of IR4.0, we will see more researches incorporating the elements of technology in the near future. Emerging issues such as leading and managing in COVID-10 and post-COVID-19 could potentially be a good research subjects to venture in the next couple of years. All in all, the opportunities to publish in this area is wide open due to the dynamics of articles related to this topic.

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