

The Relations among Business Model, Higher Education, University and Entrepreneurship Education: An Analysis of Academic Literature of 2009-2019 Period

Elzo Alves Aranha, Marcio M. Araki

Abstract—Business model (BM) is a term that has been receiving the attention of scholars and practitioners and has been consolidating itself as a field of study and research. Although there is no agreement in the academic literature on the definition of BM, at least there is an explicit agreement: BM defines a logical structure of how an organization creates value, capture value and delivers value for the customers and stakeholders. The lack of understanding about connections and elements among BM and higher education, university, and entrepreneurship education opens a gap in the academic literature. Thus, it is interesting to analyze how BM has been approached by the literature and applied in higher education, university, and entrepreneurship education aimed to know the main streams of research. This is because higher education institutions are characterized by innovation, leading to a greater acceptance of new and modern concepts such as BM. Our research has the main motivation to fill the gap in the academic literature, making it possible to increase the power of understanding about connections and aspects among BM and higher education, university, and entrepreneurship education. The objective of the research is to analyze the main aspects among BM and higher education, university, and entrepreneurship education in academic literature. The research followed the systematic literature review (SLR). The SLR is based on three main factors: clarity, validity, and auditability. 82 academic papers were found in the past 10 years, from 2009-2019. The search was carried out in Science Direct and Periodicos Capes databases. The main findings indicate that there are links between BM and higher education, BM and university, BM, and entrepreneurship education. The main findings are inserted within seven aspects. The findings are innovative and contribute to increase the power of understanding about the connection among BM and higher education, university, and entrepreneurship education in academic literature. The research findings addressed to the gap exposed in academic literature. The research findings have several practical implications, and we highlight only two main ones. First, researchers will be able to use the research findings to mitigate a BM research agenda involving connections between BM and higher education, BM and university, and BM and entrepreneurship education. Second, directors, deans, and university leaders will be able to carry out BM awareness programs, BM professors training programs, and makers planning for the inclusion of BM, as one of the components of the curricula of the undergraduate and graduate

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courses.

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I. INTRODUCTION

BM is a term that has been receiving the attention of scholars and practitioners [1]. The BM notion “establishes the organization's value logic in terms of how it creates and captures value for the customer” and stakeholders [2].

Several academic articles seek to develop bibliometric analysis and SLR aimed at understanding a set of elements that involves the BM field [3]-[6]. For instance, a BM framework integrates several elements that can be explored in BM field [3], the BM-activities, BM-logics, BM-archetypes, BM-alignment as perspectives in BM research [4], from BM and BM innovation, as emergence of field research and the four streams of research [5] and BM anchored in two disciplines, Strategic Management and Innovation & Entrepreneurship [6].

Few academic articles seek to analyze BM linked to entrepreneurship [6]. However, it is important to investigate BM linked to higher education, university and entrepreneurship education. The lack of BM academic papers linked to higher education, university and entrepreneurship education makes it difficult to understand the elements that are present in these connections. The lack of understanding about connections and elements among BM and higher education, university and entrepreneurship education opens a gap in the academic literature. Thus, it is interesting to analyze how BM has been approached by the literature and applied in higher education; university and entrepreneurship education aimed to know the main streams of research. This is because universities are characterized by innovation, leading to a greater acceptance of new and modern concepts such as BM. So, we can raise the following question: What are main aspects among BM and higher education, university and entrepreneurship education in academic literature? To answer this question, a SLR was conducted.

The research aims to analyze the main elements among BM and higher education, university and entrepreneurship education in academic literature.

The remainder of this article is structured as follows. The

second section presents a BM overview. The third section shows methods and techniques. The fourth section presents the findings and discussions. The fifth section outlines the innovative contributions and practical implications. Finally, the last section presents the final consideration

II. BUSINESS MODEL

There are several definitions in the academic literature of BM and there is no agreement among authors about the definition. One of the definitions emphasizes that BM is logical structure of value for an organization that describes 'how value is created and captured for the customers', being constituted of strongly interrelated elements among value proposition, customers and economic dimensions [2].

Another definition mentions that BM describes the content, structure and governance of transactions designed to create value through the exploration of business opportunities [7]. The notion of understanding value, creating value, capturing value and delivering value are present in the BM proposed by several authors [2]-[7].

Motivated by e-commerce companies, one of the first papers proposing definitions of the BM term dates back to the late 90s of the last century. BM defines a logical structure of how an organization creates value, capture value and delivery value for the customers and stakeholders [2].

The growth of academic papers has broadened the definition of BM. Bibliometric analysis and SLR have contributed to the understanding many aspects of BM field [3]-[9]. However, the investigations about connections and elements among BM and higher education, university and entrepreneurship education help in the production of knowledge and contribute to fill the lack of understanding.

III. METHODS AND TECHNIQUES

The research followed the Systematic Literature Review - SLR [10]. The review is based on three main factors: clarity, validity and auditability. Therefore, the research was structured as follows: (1) formulation of the problem; (2) development and validation of the review protocol; (3) survey of the literature; (4) screening for inclusion; (5) quality assessment; (6) data extraction; (7) data analysis and synthesis; (8) documentation of results.

After raising the questions in the Introduction (step 1), the strategy for collecting the articles to be analyzed by RSL (step 2) was developed. The search was carried out in 2 different sources, Science Direct and the Periodicos Capes of Ministry of Education of Brazil.

The terms searched considered the articles from the period from 1st of January of 2009 to 1st of January of 2019 (step 3). To ensure a better coverage of the topic, three combinations of keywords were used, namely:

- BM + Higher Education
- BM + University
- BM + Entrepreneurship Education

The search took into consideration only the articles that presented the terms in the title, abstract or keywords. Only articles on business, administration and education (stage 4 and

stage 5) were also considered. Data analysis was performed with the help of MS Excel and MS Word tools (step 6 and step 7). Finally, the results and conclusions were documented in this article (step 8).

IV. FINDINGS AND DISCUSSION

A. Description of Findings

A total of 110 academic papers were found in the past 10 years. The Science Direct has 77 papers and Capes has 33 papers. The three combinations of keywords were used, namely:

- BM + Higher Education
- BM + University
- BM + Entrepreneurship Education

Fig. 1 shows the results per database.

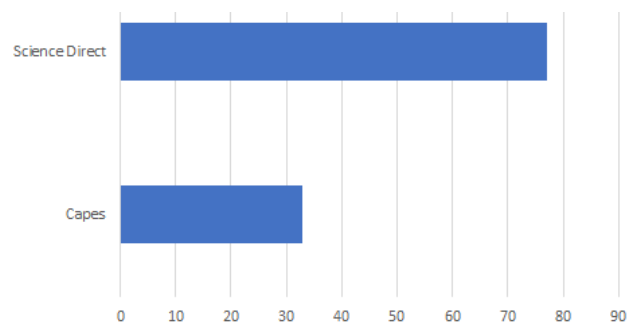


Fig. 1 Number of results from each source

Fig. 2 shows each type of articles. In the "others" column. It was considered conference abstracts, case reports, discussion, short communications, congress, research datasets and textual resources. There is a total of 82 articles, 10 book chapters and 18 "others".



Fig. 2 Number of articles from each type

Fig. 3 shows the amount of results by year for the keywords BM + higher education. There are 27 articles about business modern and higher education. According to Fig. 3, the articles of BM and higher education were published in journals, starting in 2012. In the years of 2014 and 2016, five articles were published.

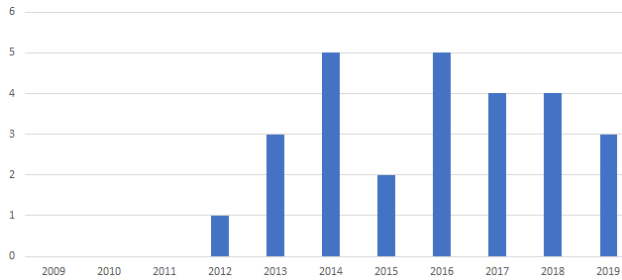


Fig. 3 Number of results by year for "BM + higher education"

Fig. 4 shows the amount of results by year for the keywords BM + university. There are 77 articles about business modern and university. According to Fig. 4, it shows as of 2011, there was a growth in academic papers. In 2019, 14 articles were published, considered the largest amount over 10 years.

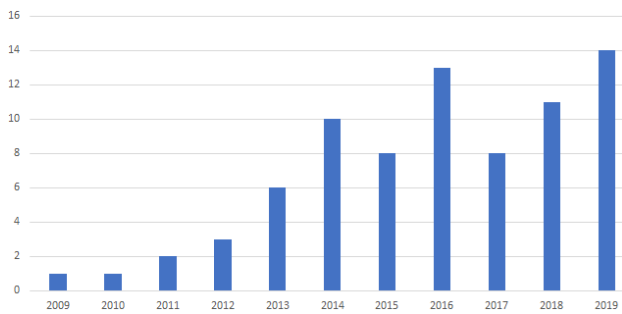


Fig. 4 Number of results by year for "BM + university"

Fig. 5 presents the amount of results by year for the keywords BM + entrepreneurship education. There are six articles only in 2018.

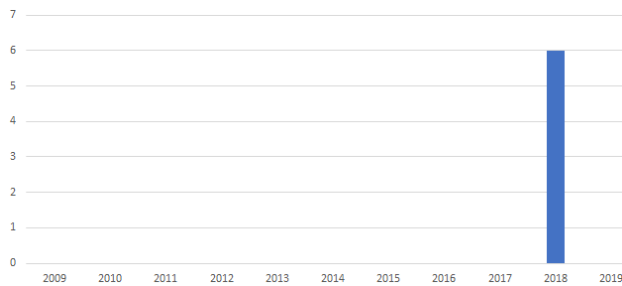


Fig. 5 Number of results by year for "BM + entrepreneurship education"

As mentioned earlier, there are 82 articles published in journals. Table I shows the number of articles from each journal title with three combinations of keywords were used, namely:

- BM + Higher Education
- BM + University
- BM + Entrepreneurship Education

Journals that published only one article are not in Table I and are 29 articles. There is a total of 63 articles with two or more articles published on journal.

Journal of Cleaner Production is first journal that has nine articles. According to Table I, the second journal is Procedia – Social and Behavioral Sciences that published seven articles.

TABLE I
BM ARTICLES FROM JOURNALS

Publication Title	Count
Journal of Cleaner Production	9
Procedia - Social and Behavioral Sciences	7
Procedia Computer Science	5
Journal of Young Pharmacists	4
Procedia Economics and Finance	4
Technological Forecasting & Social Change	3
Procedia CIRP	3
Technovation	2
International Colloquium on Information Science and Technology 2016 4th IEEE	2
International Journal of Educational Development	2
Long Range Planning	2
Online Learning and its Users, 2016	2
Open Learning	2
Open Learning: The Journal of Open, Distance and e-Learning	2
Procedia Engineering	2
Transportation Research Procedia	2
Procedia Manufacturing	2
Journal of Administration and Innovation	2

Table II shows the count for each keyword that was different from the ones searched previously. For better view, it was considered only the keywords that appeared more than two times.

In the second position the term MOOC stands for "Massive Open Online Courses. The MOOCs are a new way to offer courses in a free, credit-less and massive way. Coursera, edX and Udacity are the main platforms of MOOC, and they have a strong partnership with universities that use the MOOC to provide their courses to a wider variety of people.

TABLE II
COUNT OF THE KEYWORDS

Keyword	Count
Business model innovation	7
MOOC	7
Open innovation	4
University spin-off	4
Backcasting	3
Blended learning	3
Educational excellence	3
Global education	3
Malaysia	3
Resource efficiency	3
Service sector	3
Start-up	3
Sustainability	3
Sustainable business model innovation	3
Sustainable development	3
Technology transfer	3

Table III shows the number of articles by author. According to Table III, two authors published equal to or more than two articles.

TABLE III
NUMBER OF ARTICLES BY AUTHORS

Author	Articles
Kalman, Yoram M [11]-[12]	Cutting through the hype: evaluating the innovative potential of new educational technologies through business model analysis. Wikibooks in higher education: Empowerment through online distributed collaboration.

B. Discussion of Findings

A total of 82 papers were found in the past 10 years (from 1st of January of 2009 to 1st of January of 2019). The three combinations of keywords are:

- BM + Higher Education
- BM + University
- BM + Entrepreneurship Education

The findings indicate that:

- a) Aspect 1 - There are 27 articles about business model and higher education.
- b) Aspect 2 - There are 77 articles about business model and university.
- c) Aspect 3 - There are six articles about BM and entrepreneurship education.
- d) Aspect 4 - Journal of Cleaner Production is first journal that has 9 articles. The second journal is Procedia – Social and Behavioral Sciences that published 7 articles.
- e) Aspect 5 - Two authors published equal to or more than two articles.
- f) Aspect 6 - The articles are related to the following topics: spin-off, backcasting, blended learning, educational excellence, global education, resource efficiency, service sector, start-up, sustainability, sustainable BM innovation, sustainable development and technology transfer.

V. INNOVATIVE CONTRIBUTIONS AND PRACTICAL IMPLICATIONS

The findings are innovative and contribute to increasing the power of understanding about the connection among BM and higher education, university and entrepreneurship education in academic literature. We highlight only an innovative contribution. The research findings are addressed to the gap exposed in academic literature. There are few academic papers analyzing connections among BM and higher education, university and entrepreneurship education. The absence of academic papers opens a gap in the academic literature. The research findings are innovative.

The research findings have practical implications. First, research findings may contribute to building a research a BM research agenda about connections between BM and higher education, BM and university and BM and entrepreneurship education. The research agenda may help researchers to develop new investigations about BM. Second, several university actors will be able to use the research findings. University actors as directors and deans will be able to develop BM awareness programs and BM professors training program. Professors may include BM, as one of the components of curricula of the undergraduate and graduate

courses.

In Brazil, the new engineering curriculum guidelines approved by the Brazilian Education National Council on January of 2019, emphasize that the engineering students must have several characteristics: (a) apply management concepts to plan, supervise, develop and coordinate engineering innovation projects; (b) design and develop new entrepreneurial structures and innovation solutions for organizations; (c) prepare to lead entrepreneurial project in all aspects of production, finance, person and the market. These three characteristics that delineate the new engineering profile presented above can be developed, based on BM. The research findings can contribute to inserting BM in Brazilian undergraduate engineering courses.

VI. FINAL CONSIDERATIONS

BM has been consolidating itself as field of study and research. The bibliometric analysis and SLR show that the term BM has aroused the interest of scholars and practitioners, as seen with annual growth in the number of academic articles [3]-[6].

The lack of understanding about connections and elements among BM and higher education, university and entrepreneurship education opens a gap in the academic literature. Our research has a main motivation to fill the gap in the academic literature, making it possible to increase the power of understanding about connections and elements among BM and higher education, university and entrepreneurship education.

The objective of research is to analyze the connection among BM and higher education, university and entrepreneurship education in academic literature. According to the literature review and based on research findings, there are connections and several aspects linked to BM and higher education, BM and university and BM and entrepreneurship education.

The findings of the present research are innovative and produce impacts and practical implications. The objectives of our research were fully achieved. However, it becomes essential open the arena of discussion, reflexive and streams of research involving the connection between BM and higher education, BM and university and BM and entrepreneurship education.

There is the next step for our research in the future. The first step is the investigations of each aspects and connections identified in the literature with the aim of developing tools, taxonomies and models. These tools, taxonomies and models should make it possible to broaden the power of understanding of these connections and elements mapped.

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