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State-of-the-art of business models: A bibliometric analysis from 2017 to 2022

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Master in Management

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October, 2022

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BUSINESS
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Department of Marketing, Operations and Management

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Resumo

Os Modelos de Negócio já foram estudados em diferentes dimensões. No entanto, as análises bibliométricas nesta área ainda são limitadas. Esta investigação tem como objetivo realizar uma análise bibliométrica da investigação dos Modelos de Negócio, de maneira a identificar o estado da arte, tendências, e outros indicadores através da análise de artigos publicados na plataforma Web of Science (WoS) entre 2017 e 2022. A presente investigação examina a ocorrência simultânea de publicações por ano, tendências de palavras-chave, acoplamento bibliográfico, análise de coautorias, cidades, e instituições, e comprova que a literatura dos modelos de negócio se expandiu rapidamente entre 2017 e 2020. Um total de 14881 artigos foram obtidos como amostras. A presente investigação utilizou o software VOSviewer para analisar os dados. Uma quantidade considerável de literatura foi produzida sobre os modelos de negócio, no entanto, os investigadores deixaram de desenvolver mais literatura sobre o tema o que suscita reflexão. As conclusões desta investigação mostram que há necessidade de desenvolver modelos de negócio em diferentes segmentos, tais como a sustentabilidade e a digitalização.

Palavras-Chave: Modelo de Negócio, Análise Bibliométrica, Inovação de Modelos de Negócio, Sustentabilidade, Digitalização.

Classificação JEL: M10; M16.

Abstract

Various studies have investigated the Business Model (BM) in different dimensions. However, bibliometric analyses in this discipline is still limited. This research aims to conduct a bibliometric analysis of business model research, identifying the state of the art, trends, and other indicators by analyzing articles published on the Web of Science (WoS) platform from 2017 to 2022. The present research examines the simultaneous occurrence of publications by year, keyword trends, bibliographic coupling, analysis of co-authorship, cities, and institutions, and finds that the literature on business models rapidly expanded between 2017 and 2020. A total of 14881 articles were obtained as samples. The present research employs VOSviewer software to analyze the data. A considerable amount of literature has been produced on BM, but researchers have stopped developing further literature which is thought-provoking. Based on the findings of this research it is concluded that there is a need to research BM in different domains such as sustainability and digitalization.

Keywords: Business Model, Bibliometric Analysis, Business Model Innovation, Sustainability, Digitalization.

JEL: M10; M16.

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1. Introduction

The business model concept was developed during the 1970s and connected to IT system designs. Since the 1990s, organizational and strategy theories and technology developments have fueled the idea's growth (Wirtz *et al.*, 2016). Understanding your business model is important, a corporation can get a competitive edge by building a unique business model (Lanzolla & Markides, 2021). According to the author, more frequent and complicated disagreements increase a firm's competitive edge. A business model (BM) can be defined by literature as the "architecture or design of a business's value capture, delivery, and creation" (Teece, 2010). In short, it describes how a business operates (Magretta, 2002). Due to its complex character and vast scope in progressive ideas, combining two 'contradictory' worlds of knowledge (physical/technical based on concrete facts and economically based on questionable assumptions), the BM devise definition is imprecise. It has been interpreted in numerous ways (Gassmann *et al.*, 2016). BM is defined as adjusting business models in response to internal and external motivations (Geissdoerfer *et al.*, 2018c; Foss & Saebi, 2017). BM is "the quest for novel organization logic and new tactics to develop and preserve value" (Casadesus & Zhu, 2013). BM is considered more important than service/product or process innovation (Johnson *et al.*, 2008).

A BM describes how a company or organization provides value to its clients. In its most basic form, a business model offers details about the organization's target market, the requirements of the same market, and the how the company's goods or services will satisfy those needs (Foss & Saebi, 2017). Business model innovation is how a company modifies its business model. This innovation frequently represents a fundamental shift in how a business provides value to its clients, whether through the creation of new income sources or distribution channels (Chofreh *et al.*, 2019).

Small and Medium-Sized Enterprises (SMEs), vital to a country's economic development, are pushed to construct their business models to increase efficiency and competitiveness (Foss & Saebi, 2017; Guo, Tang *et al.*, 2017). The existing economic system is steadily splaying socioeconomic inequities, such as access to new services and products and life expectancy (Webster, 2015). Modern economic trends have also hampered businesses. Integration and globalization have a growing influence on the ability of economic institutions to function and improve. Growing political, social, and economic interconnectedness and establishing an

information infrastructure are the basic factors of globalization (Rojek, 2019). Globalization links the global perspective to understanding social, political, and economic phenomena (Buckley & Tian, 2017). Almost all businesses compete in today's dynamic and continuously changing marketplaces. These achievements are shaping current economic, political, and social tendencies. It surpasses the ecosystem's intrinsic potential for self-healing (Rockström *et al.*, 2009). Therefore, social behavior and industrial pattern must alter according to the market environment (Robert *et al.*, 2005; Evans *et al.*, 2009).

To improve social inclusion, environmental resilience, and economic performance, firms must build relationships with their customers, suppliers, distributors, and other stakeholders to provide products, services, technologies, processes, and sustainable business models that benefit the economy, society, and environment (Ekins, 2011). Business model innovation refers to how a company modifies its business model. This innovation frequently represents a fundamental shift in how a business provides value to its clients, creating new income sources or distribution channels. The business model's emphasis on interconnection and multi-lateral ties may help managers and entrepreneurs compete in an integrated economy (Bigelow & Barney, 2021). Business models are formed in reaction to market changes and aim to beat the market competition (Dellyana *et al.*, 2018). Traditional company models cannot solve long-term business problems (Goni *et al.*, 2021). To develop, deliver, and acquire value, businesses must choose the right business model (Torres *et al.*, 2019). A business model modifies established models by introducing originality into value chains (Geissdoerfer *et al.*, 2018c). Businesses must change how they create, provide, and collect economic, environmental, and social value (Shakeel *et al.*, 2020). Organizations know they can attain sustainable goals through technical advances and business model innovation (Geissdoerfer *et al.*, 2017b; Rojek, 2019). A business model is a "simplified depiction of the components, their interrelationships, and the engagements with its stakeholders" (Geissdoerfer *et al.*, 2016a). Business models have improved organizations' sustainability performance considering the Sustainable Development Goals (SDGs). The business model notion illustrates how an organization sustainably generates, provides, and collects value in cultural, social, economic, or other areas. A business model describes how a corporation creates and uses economic value (Bigelow & Barney, 2021).

Business model development aims to improve shareholder value and company earnings (Bagheri *et al.*, 2020). Business model innovation focuses on management, operations, and economics to identify, evaluate, and enhance concepts. Valuation techniques in a firm's value chains must be understood (Chofreh *et al.*, 2019). Global warming and resource shortages affect

development and consumption. If businesses do not improve development and consumption, population and income will rise. To satisfy their stakeholders, businesses must change and reinvent their company methods (Luthra & Mangla, 2018). Business models have gained prominence in the previous two decades of e-commerce development. Recent research on this topic has progressed rapidly, spanning several application disciplines. The current analysis reviews the 2017-2022 business model and identifies crucial characteristics. The current research uses an approach based on business model innovation literature. BM must address value capture, value delivery, and value creation.

The findings of this research are important for academics and professionals because it will help bring better understanding to BM's bigger picture and create an urgency to design and implement more realistic BMs for enterprises. The current research reveals that the literature on business models' innovation is fast growing by looking at the simultaneous occurrence of publications by year, keyword trends, bibliographic coupling, and analysis of co-authorship, cities, and institutions. Through the careful selection and content analysis of the most current and significant articles published in this research field, the present research adds to the existing literature by giving information on the state of the art and highlighting the trends, gaps, and research possibilities in this area. Those now investigating or planning to pursue this field of investigation may get invaluable insight from this contribution.

The first goal of this research is to determine the current business model and its historical development in this field. As in the last five years, there has been a significant decline in the number of publications, this research sets out to increase the notoriety of this field of study in the hopes of increasing the number of publications. In addition, this research compiles business model-related journal articles to illustrate the breadth of this type of innovation in business model innovation. Further, this research offers a geographic analysis of the literature on business model innovation by looking at where the authors of these 14881 articles are located since the sample is geographically dispersed among 19 cities across 5 continents. In addition, the research details the "publications by organizations" and "related articles on the business model innovation" that are key to locating the most important works in the field.

Moreover, this research looks at the current state of the art, spotting research gaps and openings in business model innovation. This paper aims to introduce a bibliometric approach to BM in the field of business and innovation by observing articles published on the Web of Science and then classifying the results with VOSviewer software to determine the state of the

art in this area and to identify trends and other relevant indicators. This research analyses the current literature to determine where further research is needed in business models.

The present research is segmented into five chapters as follows: 1. Introduction, 2. Methodology, 3. Bibliometric Analysis, 4. Discussions and Findings and 5. Conclusion and Policy Recommendations.

The Introduction explains the business models' background, including their brief history, and importance. Moreover, it also explains this research's objectives, aims, scope, and goals. The second chapter reveals the methodology used for this research i-e., bibliometric analysis. The third chapter shows the bibliometric analysis of the publications of BM throughout the years 2017 to 2022 by year, keyword trends, bibliographic coupling, and analysis of co-authorship, cities, and institutions. This chapter also presents the graphics of indicators used in bibliometric analysis using VOSviewer. The fourth chapter discusses the research and bibliometric analysis and research findings. The last chapter displays the conclusion of the research as well as the policy recommendations.

2. Methodology

This research focuses on the state-of-the-art of business models through a bibliographic literature analysis from 2017 to 2022. The bibliometric analysis approach is very popular nowadays because it gives a structured representation of the papers published in each study field using objective criteria for examining and organizing publications. This research used a conceptual research technique to analyze innovative business models based on a literature review. The process comprises numerous phases, including collecting relevant works, evaluating concepts and aspects from existing studies, identifying knowledge gaps and contradictions in the literature, and developing a new idea. The term "Business model" was used as a keyword to search the literature since it is connected to the understudied issue. Different research publications found on this topic in different journals, such as the Journal of Sustainability, Business Modelling and Software Design, Journal of Cleaner Production, International Journal of Business and Society, Journal of Wireless Personal Communications, International Journal of Technology and Management, Business Strategy and the Environment, International Journal of Innovation Management, Wireless Personal Communications, Industrial Marketing and Purchasing (IMP) Journal, International Journal of Innovation and Management, and the list continues.

The existing concepts are studied to identify the ideas and aspects that have been studied before. This process was designed to discover the shortcomings and new features that must be included in future innovative business models. These characteristics and new ones are then included in a new BM framework to produce more effective, innovative business solutions. Data was acquired from one of the most prominent bibliographic databases, the WoS Core Collection database, which includes other sub-databases. The most reliable database 'The web of science, is used to search out the relevant studies with a custom range from 2017 to 2022. The first 50 search filters, "Business Models" results from 2017 to 2022, were selected since the WoS algorithm detects the most relevant papers to the given keywords. The journals that these 50 papers are related to, have published 14881 articles from 2017 to 2022. The use of the VOSviewer application, in turn, allows the data to be shown graphically using a categorical map.

Nevertheless, the Web of Science collects scientific articles with the greatest effect and is employed as the key parameter in academic decision-making (Jiménez *et al.*, 2020). The data

is then analyzed using a similarity visualization application (VOSviewer) to graphically illustrate some potential outcomes graphically. The findings established the development status and the key trends in terms of impact, publications, authors, major journals, topics, countries, and institutions. Analysis and graphic depiction are necessary since they may assist professionals and academics in having a better comprehension of what has been discovered in business models. The quotation is generated when two documents are acquired from the same article. This strategy is used in documents, journals, and authors. Author, co-occurrence of keywords quantifies the most frequently used terms in papers. Co-authorship shows the number of publications with a given collection of variables and how they relate to one another, and bibliographic coupling occurs when two papers quote the same document (Mulet *et al.*, 2019).

3. Bibliometric Analysis

3.1. Publications by Years (2017-2022)

Table 1. Publication by Years from 2017 to 2022

Publications by Year	Volume	% Out of 14881
2017	11283	75.82%
2018	826	5.55%
2019	604	4.06%
2020	1761	11.83%
2021	331	2.22%
2022	89	0.60%

Table 1 depicts the yearly variations in publications on this topic based on a sample of 14881 articles. Regarding annual productivity, 14881 articles were published between 2017 and 2022. The year 2017 represented the maximum number of articles published on the topic of business model, which was 11283. In 2017, the concept of BM had a steep up rise in published papers due to the wide research community. In 2017, researchers focused on developing a sustainable business model to achieve SDGs introduced in 2015. It could be said that conducting vast literature on BM in 2017 has contributed greatly to maturing the topic. However, since the COVID-19 pandemic had a stronger impact on businesses in 2020, business researchers shifted their focus to designing and implementing digital business models. However, published BM studies have decreased significantly, with 331 and 89 publications published in 2021 and 2022, respectively.

3.2. Publication by Journals (2017-2022)

Table 2. Publication by Journals from 2017 to 2022

Journals	Volume	% Out of 14881
Business Process Management Workshops (BPM 2017)	11034	74.15%
Journal of Cleaner Production	944	6.34%
Advances in Production Management Systems: Towards smart and Digital Manufacturing, PT II	592	3.98%
Business Modelling and Software Design, 2020	391	2.63%
Business Modelling and Software Design, 2019	356	2.39%
Enterprise Information System, ICEIS 2016	291	1.96%
Wireless Personal Communications	217	1.46%
Journal of Business Ethics	152	1.02%
Journal of Business Research	130	0.87%
International Journal of Technology Management	89	0.60%
Industrial Marketing Management	86	0.58%
Business Strategy and the Environment	85	0.57%
Business Horizons	63	0.42%
Research-Technology Management	61	0.41%
Long Range Planning	51	0.34%
Journal of Management Development	36	0.24%
Proceeding of the second International Conference on Economic Business Management (FEBM 2017)	33	0.22%
Technology Analysis & Strategic Management	32	0.22%
Electronic Markets	30	0.20%
NTU Management Review	29	0.19%
Sustainability	26	0.17%
Ekonomiska Misao I Praksa-Economic Thought and Practice	26	0.17%
International Journal of Electronic Commerce	22	0.15%
International Journal of Innovation Management	21	0.14%
International Journal of Business and Society	19	0.13%
Innovation and Management Review	15	0.10%
Journal of Competitiveness	13	0.09%
IMP Journal	11	0.07%
African Journal of Science Technology Innovation and Development	11	0.07%
Journal of Family Business Management	11	0.07%
2017 IEEE 19 th Conference on Business Informatics, Vol 1	2	0.01%
2017 IEEE 19 th Conference on Business Informatics, Vol 2	2	0.01%

Table 2 shows that out of 14881 articles, 11034 (74.15%) were published by “Business Process Management Workshops (BPM 2017)”, 944 (6.34%) by “Journal of Cleaner Production”, 592 (3.98%) by “Advances in production management system: towards smart and digital

manufacturing, PTII”, 391 (2.63%) by “Business Modeling and Software Design, BMSD 2020”, 356 (2.39%) by “Business Modeling and Software Design”, 291 (1.96%) by “Enterprise Information Systems (ICEIS 2016)”, 217 (1.46%) by “Wireless Personal Communication”, and the other 1056 (7.06%) made a large collection of journals shown in table 2 above. The Business Process Management Workshops (BPM 2017) journal has the most publications due to its wide scope and purpose. This topic is interdisciplinary and may be published in journals from many domains and with various approaches.

3.3. Keyword Analysis (2017-2022)

The most used keywords were collected and examined to categorize the 14881 articles in the sample. This analysis highlights the keywords that most frequently appeared in the investigated area.

Table 3. Keyword Analysis from 2017 to 2022

Keywords	Occurrences	% Out of 64
Business Model	16	25%
Business Model Innovation	14	22%
Review	7	11%
Business	6	9%
Sustainability Business Model	4	6%
Approach	4	6%
Sustainable Business Model	3	5%
Sustainability	3	5%
Pattern	3	5%
New Business Model	2	3%
Digitalization	2	3%

From the 50 publications from 2017 to 2022, 128 keywords were found of which 11 were used in more than one article. Resulting in a prevalence of these 11 articles of 8.59% ($11 \times 128 / 100$). Table 3 shows that the keyword “Business Model”, has the most occurrence in research publications, with an occurrence rate of 16 (25%). Further, the keyword “Business

Model Innovation”, has the second highest occurrence in the research publications with 14 (22%) times. These two keywords have occurred the most in the research publications because of the changing needs and requirements of the business world. Researchers aim to design and implement the most suitable and practical BM possible through the BM innovation process.

Author keyword analysis, in figure 1, applied in this research, aims to recognize the relation between keywords and indicate the clusters. This analysis requires one occurrence of a keyword.

Thus, VOSviewer can be used to visualize the thresholds. The analysis of the 50 documents generated 4 clusters with different colours. The prominent cluster is green, labelled as “Business Model”, which possesses the most researched keyword. The second cluster, which is represented in red is labelled as “Business Model Innovation”. The third cluster, represented with blue dots is labelled as “Review”, and the fourth cluster in yellow is labelled as “Sustainability”.

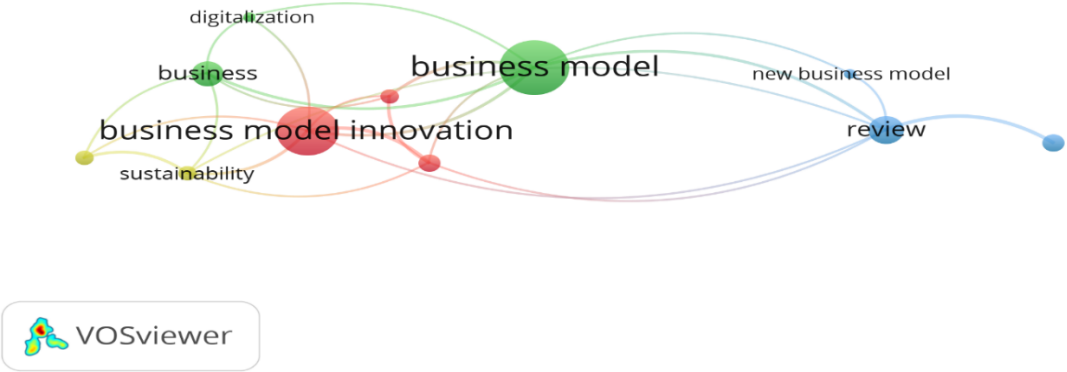


Figure 1. Keyword Analysis (2017-2022)

3.4. Geographical Analysis of Publications (2017-2022)

Studying the authors' regions of affiliation reveals that this research has a global scope since the sample's 14881 articles were published from 19 different cities worldwide. This implies that at least one publication has been published in each city. Based on the data, Cham has the most publications with 12065 (81.08%) articles, followed by the Oxford with 995 (6.69%) articles and Berlin with 599 (4.03%) articles. New York ranks 4th in terms of publications. Table 4 shows the exact result of publications in co-authorship by city from 2017 to 2022.

Table 4. Number of publications in co-authorship by city from 2017–2022

Publication by City	Volume	% Out of 14881
Cham	12065	81.08%
Oxford	995	6.69%
Berlin	599	4.03%
New York	437	2.94%
Dordrecht	152	1.02%
Geneva	89	0.60%
Hoboken	85	0.57%
Bingley	73	0.49%
Abingdon	65	0.44%
Amsterdam	63	0.42%
Arlington	61	0.41%
Paris	33	0.22%
Heidelberg	30	0.20%
Taiwan	29	0.19%
Basel	26	0.17%
Dubrovnik	26	0.17%
Singapore	21	0.14%
Sarawak	19	0.13%
Zlin	13	0.09%

3.5. Analysis of Publications by Organizations (2017-2022)

Table 5. Publications by Organization from 2017 to 2022

Publisher (Organization)	Volume	% Out of 14881
Springer International Publishing Ag	12065	81.08%
Elsevier Sci Ltd	1052	7.07%
Springer-Verlag Berlin	599	4.03%
Springer	369	2.48%
Elsevier Science Inc	130	0.87%
Inderscience Enterprises Ltd	89	0.60%
Elsevier Science Inc	86	0.58%
Wiley	85	0.57%
Emerald Group Publishing Ltd	73	0.49%
Routledge Journals, Taylor, & Francis Ltd	65	0.44%
Elsevier	63	0.42%
Industrial Research Inst, Inc.	61	0.41%
Atlantis Press	33	0.22%
Springer Heidelberg	30	0.20%
Natl Taiwan Univ, Coll Management	29	0.19%
MDPI	26	0.17%
Univ Dubrovnik	26	0.17%
World Scientific Publ Co PTE Ltd	21	0.14%
Univ Malaysia Sarawak, Fac Economics & Business	19	0.13%
Univ Tomase Bati & Zline, Fak Management Tu Ekonomiky	13	0.09%
MDPI	13	0.09%
IEEE	4	0.03%

Table 5 depicts the result of publications by organizations. The top five organizations responsible for the publications of the 14881 articles are “Springer International Publishing AG”, “Elsevier SCI Ltd”, “Springer-Verlag Berlin”, “Springer”, and “Elsevier Science Inc”. Nevertheless, apart from what happens in journals or countries of publishing, it is obvious that the volume of the articles issued by the organization is extremely diverse. “Springer International Publishing AG” is the topmost publisher with 12065 (81.08%) out of 14881 articles. “Elsevier SCI Ltd” is the publisher with the second highest number of articles published, with 1052 (7.07%). “Springer-Verlag Berlin” is the publisher with the third highest

number of articles published, with 599 (4.03%). “Springer” is the fourth with 369 (2.48%), and “Elsevier Science Inc” is the fifth with 130 (0.87%).

3.6. Analysis of Publications by Citations (2017-2022)

The assessment of article citations is probably the most widely used method for determining the effect of authors, journals, and publications since it identifies the most significant works in the research area (Mulet *et al.*, 2018). It is possible to determine which articles are most frequently cited in this field. Table 6 examines the pattern of citations in the relevant field of research.

Table 6. Analysis of citations from 2017 to 2022

Article Title	Authors	Journals	Publication Year	Citations
Circular business models: A review	Geissdoerfer <i>et al.</i> (2020)	Journal of Cleaner Production	2020	157
Sustainable business model innovation: A review	Geissdoerfer <i>et al.</i> (2018)	Journal of Cleaner Production	2018	120
Characterizing Business Models for Digital Business Through Patterns	Beynon <i>et al.</i> (2017)	International Journal of Electronic Commerce	2017	109
Digitization capability and the digitalization of business models in business-to-business firms: Past, present, and future	Ritter <i>et al.</i> (2020).	Industrial Marketing Management	2020	106
Dynamic business modelling for sustainability: Exploring a system dynamics perspective to develop sustainable business models	Cosenz <i>et al.</i> (2017).	Business Strategy and the Environment	2017	100

Anatomy of sustainable business model innovation	Shakeel <i>et al.</i> (2018)	Journal of Cleaner Production	2018	99
Business Model Innovation for Sustainability: Towards a Unified Perspective for Creation of Sustainable Business Models	Evans <i>et al.</i> (2017).	Business Strategy and the Environment	2017	97
Sustainable Business Model Innovation: An Umbrella Review	Sinkovics <i>et al.</i> (2017)	Sustainability	2017	91
Towards Sustainable Innovative Business Models	Lopez <i>et al.</i> (2017)	Sustainability	2017	79

Table 6 shows that the articles “Circular business models: A review” and “Sustainable business model innovation: A review” are the most cited articles among 50 publications from 2017 to 2022 and have 157 and 120 cited rates, respectively. Both articles were published in the “Journal of Cleaner Production” by Professor. Dr. Geissdoerfer in 2020 and 2018 from Oxford University England. The third most cited article among 50 publications was published by Beynon *et al.* (2017) “Characterizing Business Models for Digital Business through Patterns” in “The International Journal of Electronics and Commerce”, which has a 109 cited rate. The most cited article explains the critical concepts of BM in layman’s terms. There is much discussion about the sustainable business model and BM for digital businesses due to their relevance to contemporary needs. The second and third most cited articles explain the existing problems and invites researchers to conduct further research in the same domain.

3.7. Bibliographic Coupling of Authors (2017-2022)

When two documents cite the same document, this is referred to as bibliographic coupling (Mulet *et al.*, 2019). This might illustrate the relative strength of one publication in comparison to a group of other publications. This method applies to journals, publications, institutions, authors, and regions. It is possible to discover which publications and authors are associated through repeated citations by analyzing the bibliographic coupling of authors. Figure 2 depicts the bibliographic coupling of authors and permits us to understand and quantify the strength of their association. The map depicts two distinct groups, and the lines represent concurrent citations between the scholars.

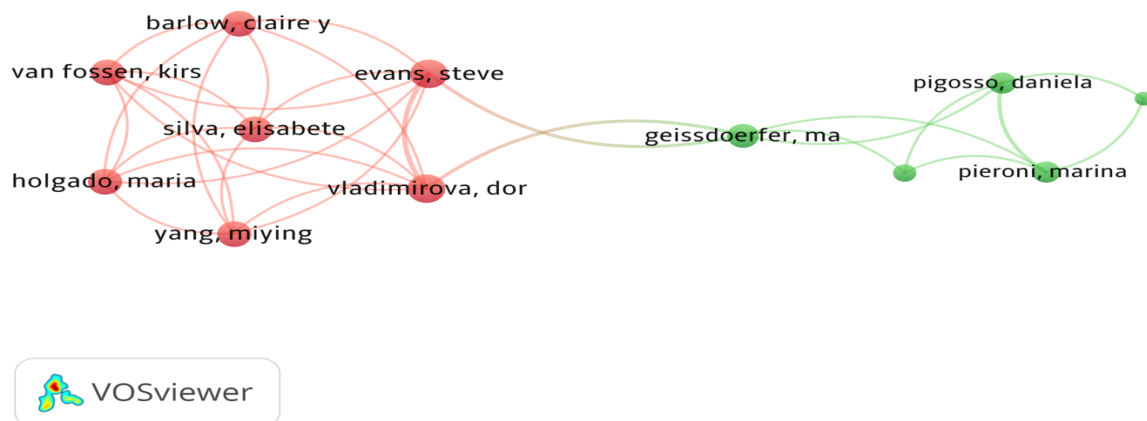


Figure 2. Bibliographic Coupling of Authors from 2017 to 2022

4. Discussions and Findings

The increased recognition of the business model phenomena, alongside with the digitization and the internet boom, drew much academic and practitioner attention (Prescott & Filatotchev, 2021). Various studies have examined BM in different fields.

For instance, Jin *et al.* (2021) analyzed the importance of the Business Model Canvas in clothing industries using 3-D printing technology.

Lamendola and Genet (2022) analyzed how time perception affects the business model choice of entrepreneurs. Further, they observed that when entrepreneurs perceive a time constraint, they concentrate on knowledge and skills from their own experiences and use one-sided business strategies. However, with no apparent time constraint, entrepreneurs may commit more time investigating their surroundings and developing alternate business model designs.

Bocken *et al.*, (2019) analyzed a sustainable business model and identified 3 main issues: boundary setting, construct clarity, and uncertainty about consequences. Further, they argued that a viable business model is about providing greater customers and business value by solving societal and environmental issues via the way business is done. However, they did not analyze the consequences of business model innovations. Therefore, implementing the innovative business model leads to undesirable results.

Athanasopoulou and De Reuver (2020) analyzed how business model tools support the process of business model exploration. They found that tools for business model exploration should permit understanding the idea of business models when the preliminary building blocks are unclear, facilitate the creation of substitutes and several variants of business models, and assist in making decisions when contrasting business model choices.

Evans *et al.* (2017b) examined the literature on sustainability innovation, BM, stakeholder theory, product–service systems, and networks theory. They developed five propositions that facilitate the formation of a sustainable business model in an integrated perception.

Ganguly and Euchner (2018) analyzed how to innovate a business model to create and capture the market. They experimented with the firms that produce goods and then addressed the relevant problems raised during the process. Finally, they found 6 steps model to capture value in the market.

Dönmez and Özevren (2019) studied the Istanbul Metropolitan Municipality's transportation business model. They specifically focused on the maritime industry and developed a model for water transportation. They found that a successful business model needs to be sustainable, valuable, and profitable. Further, they argued that an effective business model significantly contributes to the sustainability of any organization and provides a new agenda to organizations that need to acquire a competitive advantage.

López *et al.*, (2021) investigated how businesses build their business models to deal with sustainability's social, environmental, and economic dimensions and interconnectedness. They argued that social, ecological, and economic dimensions play an important role in designing business models. Therefore, managers must consider them simultaneously to develop innovative business models.

As mentioned above, analysis by publication citation is widely used as it reveals the significance of the research work. Topics like sustainability, sustainable business model, circular business model, and digitization are new and not fully comprehended by the researchers; therefore, understanding these concepts is needed before moving forward to conduct research. The most cited publications such as “Sustainable business model innovation: a review” (Geissdoerfer *et al.*, 2018), “Circular business models: A review” (Geissdoerfer *et al.*, 2020), “Characterizing Business Models for Digital Business Through Patterns” (Beynon *et al.*, 2017), “Digitization capability and the digitalization of business models in business-to-business firms: Past, present, and future” (Ritter *et al.*, 2020), and “Dynamic business modelling for sustainability: Exploring a system dynamics perspective to develop sustainable business models” (Cosenz *et al.*, 2017) explain the novel concepts from a historical and modern business world point of view. This makes researchers' work easier by defining the limitations of their work and providing them with future research opportunities. Table 6 depicts that the most cited publications are reviews that provide explanations of the novel BMs and topics in layman's terms. For example, “Circular business models: A review” by Geissdoerfer *et al.* (2020) discusses the circular business models and presents its history and working definition to clarify this concept using easy to understand language.

Moreover, these papers also present a conceptual framework and pave the road for circular business model innovation by indicating future research opportunities. Geissdoerfer *et al.* (2018) also reviewed another new concept, I-e, Sustainable business model innovation, and explained it in the light of past developments and provided working definitions. Their research

majorly depicts about solving the real-world problems of the sustainable business model innovation process by bridging the design and implementation gap of sustainable business model innovation.

5. Conclusion and Policy Recommendations

5.1. Conclusion

The current research adds to previous studies by providing information on the state of the art and analyzing gaps, and research opportunities by selecting and analyzing the most relevant and recent publications, published in this study area. The current research's findings will also help academics and practitioners comprehend the business model from a holistic viewpoint. In this sense, the case study would be the next key step in analyzing the success of the proposed business model, and it is advised that researchers examine it for the business model's future development.

It has demonstrated the significance of seeking a business model performance metric by addressing the market's relevance and the role and proving the importance of management in adopting the business model approach.

Simultaneously, the role of stakeholders in business model research was identified to capture the various points of view and respective engagement, as well as their link with business model challenges.

As can be seen in table 1, BM was studied and researched the most in 2017, due to the aim of designing and implementing a BM that can help achieve SDGs. Because of the vast literature development in 2017, the research on BM's matured, and the number of research publications decreased in the following two years. However, in 2020, researchers began to develop literature to find BM which could be used amid the COVID-19 pandemic. Developing a practical BM gave rise to the concept of BM innovation, which has been researched side by side. Moreover, changing needs of the business world compelled researchers to design and develop business models to meet the requirements; therefore, sustainability is a novel topic included in the BM research, and a considerable amount of literature has been produced around it, as can be seen

in see table 3. Different journals have a wide scope in business tools, techniques and methodologies and researchers select those journals to publish their articles. For example, despite of Business Modelling and Software Design, 2020 and Business Modeling and Software Design, 2019 journals, most researchers have chosen to publish their articles in Business Process Management Workshops (BPM 2017) due to their wide scope and purpose. Business Process Management Workshops (BPM 2017) scope encompasses e-business, a need of the contemporary business world.

Much literature has been produced on BM, but researchers have stopped developing further literature which is thought-provoking. There is a need to research BM in different domains, such as sustainability and digitalization. Furthermore, different publications show that BM is studied and researched globally. Other accomplishments of the current research might be highlighted.

First, this research identifies the state-of-the-art and evolution of the business model employed in this topic of interest. The most mentioned keywords used in examined articles are "business model" and the term "business model innovation". Keyword clusters were identified with VOSviewer.

The second contribution is premised on comprehending the interest in the research. In 2017 the highest number of articles had been published on business model namely 11283 articles. In the following years 826 articles were published in 2018, 604 in 2019, 1761 in 2020, 331 in 2021, and only 89 in 2022, respectively.

The third contribution of this research is that it provides publications by the journal on the business model. The results show that out of 14881 articles, 11034 publications were published in the journal of 'Business Process Management Workshops (BPM 2017), which shows the scope of business model in business process management.

Fourth, this research provides a geographical analysis of the business model publications. Studying the authors' regions of affiliation reveals that this research is global since the sample's 14881 articles are diversified among 19 cities scattered worldwide. This research argues that Cham has the most publications with 12065 (81.08%) articles, followed by the Oxford with 995 (6.69%) articles and Berlin with 599 (4.03%) articles. Therefore, the Cham region is the high-publisher region among the other 19 cities that highly focus on business models.

Fifth, this research provides information about ‘publications by organizations’, on the business models. The results depict that “Springer International Publishing AG” organization is the publisher which has published more articles related to business models.

Sixth, this research analyzes articles relevant to business models to determine the extent of their citations since it identifies the significant works in the research area. It is possible to determine which articles are most frequently cited in this field. The findings suggest that articles “Circular business models: A review” and “Sustainable business model innovation: A review” are the most cited articles among 50 publications from 2017 to 2022, with 157 and 120 cited rates, respectively.

Seventh, the current research analyzes the relevant articles with business models to determine the bibliographic coupling of authors. This might illustrate the relative strength of one publication in comparison to a group of other publications. This method applies to journals, publications, institutions, authors, and regions. It is possible to discover which publications and authors are associated with repeated citations by analyzing the bibliographic coupling of authors.

Future studies may lead to developing and executing more realistic BM for organizations. This research is further advanced in terms of supporting organizations in identifying opportunities and implementing a business model to get information about the target market, needs, and the role that the company’s product and services will play in meeting those needs.

5.2. Policy Recommendations

Businesses are evolving due to the change in the world regarding technology, climate, and politics. The COVID-19 pandemic has been the evidence of this change which compelled governments to impose lockdowns and close their borders to other countries’ citizens. As a result, many companies have been greatly impacted and compelled to expand their business online.

Since 2015, Sustainable Developments Goals (SDGs) have been one of the main focuses of many businesses. These businesses are determined to adopt sustainable business solutions to achieve SDGs. Moreover, technological advancements such as fast internet service, such as 5G,

have provided new ways for entrepreneurs to create, share and promote new ideas from all parts of the globe. Since businesses nowadays focus on sustainability and digitalization, researchers should think outside of the box to develop practical and problem-solving BMs.

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