Characterization of Business Model Research: Bibliometric Analysis and the Future Agenda

IVAN ŽUPIČ, MARKO BUDLER & PETER TRKMANY

Abstract The term business model has gained widespread use. Several papers discussing its origins and value have been published recently. However, most of them are more of a descriptive analysis of past research. We provide a more rigorous investigation with the help of bibliometric methods of citation analysis, bibliographic coupling and co-word analysis to examine 308 articles on business models published in the period 2010-2015. Bibliometric methods build maps of science fields based on citation information and are able to quantitatively complement literature reviews. We extracted bibliographical data from the Web of Science database. Our algorithm found four clusters of business model research. We also visualized the top 80 keywords in a heat map which presents clear thematic picture of business model conceptual domain.

Keywords: • bibliometric methods • bibliographic coupling • co-word analysis • business model
Introduction

Hyper-turbulent environment and contemporary issues in incumbent businesses established the need for in-depth observations of companies’ business models and their components. Elaborating on the absence of consensus on what a business model is or what it is not (DaSilva & Trkman, 2014), we provide readers the insights from the most important areas within a business model research in the infant stage of business model topic (before 2011) and 6 years after Zott, Amit, and Massa (2011) identified some of the most visible clusters in business model research.

Despite the discrepancies in its definition, business model is usually recognized as a set of resources through which transactions generate value for the company and its customers (Teece, 2010). Business models are necessary for capturing value and constructing organizations’ capabilities (Teece, 2010). This vice versa relationship led Zott, Amit, and Massa (2011) to conclusion that business models enable a holistic perspective for observing organizations and their businesses. The assessment of business models, their usage and future trends is helpful, since it can provide us with the insights about the main topics in business and its associated theoretical traditions (Zott, Amit, & Massa, 2011).

Drawing on the on-going research, our paper provides bibliometric methods which can be used to identify the most influential keywords and future trends in field of business models. Since academic attention paid to business models has recently increased substantially (Spieth, Schneckenberg, and Ricart 2014) a bibliometric analysis can provide a coherent map of contemporary business model research and assist both scholars and practitioners in innovating business models, along with recognizing the future trends in that area.

Our aim is to identify the past conversations (Huff, 1999) within business model literature and future avenues. Several excellent reviews of the field (Zott, Amit, & Massa 2011; Spieth, Schneckenberg, & Ricart, 2014) relied on the method of structured literature review to establish the state of the art in the field. Our contribution is to complement these reviews with bibliometric methods that use quantitative bibliographical data (Zupic & Čater, 2015). In this way we can tap into the knowledge created by scholars in the field who expressed their opinion by citing (or not!) specific articles and books. Such an investigation also forms an excellent basis to speculate on whether business model will survive as a term within strategic management and information systems literature as a distinct term to e.g. competitive advantage, strategy or digital transformation.

Literature review

Every organization employs a business model that encompasses how value is created, delivered and captured (Teece, 2010). An ample amount of research revealed that the consensus on what a utilization, development and structure of a business model has not been reached yet (Zott, Amit, & Massa, 2011). That is why business model has been
applied to different environments and utilized within a different context (Zott, Amit, & Massa, 2011). Besides, phenomena such as the emergence of e-businesses and surge of technology innovations have influenced the development of business models.

Business model is quite difficult to be depicted without a broader understanding of the environment in which organization operates. Despite that, some authors made an attempt to introduce business model through text and graphics (Casadesus-Masanell & Ricart, 2011; Ross, Vitale, & Weill, 2002) in order to provide managers with a unique template for designing a winning business model. In spite of not having a universally applicable ‘template’, business model does depict “the content, structure, and stewardship of transactions that enable value creation in future business opportunities” (Zott & Amit, 2008). Teece (2010) ads data and other evidence into business model concept, since these two seem to support the value proposition for end-users. Finally, a line between strategy and business model was given by Casadesus-Masanell and Ricart (2011), who identified a business model as a reflection of a firm’s strategy. Additionally, business model not only resonates company’s strategy but also links technological innovation to strategy (Chesbrough & Rosenbloom, 2002). Innovation and technology are two facets of business models development, whereas only a scant amount of scholars have more or less successfully conceptualized business models’ elements and relationships (Osterwalder, Pigneur, & Tucci, 2005; Baden-Fuller & Haefliger, 2013).

According to Zott and colleagues an adequate business model is the one with value network encompassing both value creation and value capture, meaning to include all stakeholders and distribution channels along the entire supply chain of a certain organization. A company should not focus only on improving business model elements but to develop them in such a way that it will be able to continually change its existing or add a new business model as a response to unexpected changes (Trkman, Budler, & Groznik, 2015). Unfortunately, managers usually respond by optimizing only each of the element of the current business model (DaSilva, Trkman, DeSouza, & Lindič, 2013). This is insufficient, because the development of a new business model entails a paradigm shift, which requires an in-depth analysis of customers, competitors and partners (Teece, 2010). More importantly, the emphasis should be on articulation of business model and an evaluation “against the current state of the business ecosystem, and against how it might evolve” (Teece, 2010). The allure of business models is that they are based on observation and theorizing (Baden-Fuller & Morgan 2010), making them a perfect template for running companies’ businesses.

Business model development is a long-term process (Dmitriev, Simmons, Truong, Palmer, & Schneckenberg, 2014) that can ‘shake’ the markets or vice versa as seen when the emergence of information-communication technologies (ICT) stroke the concept of a business model (DaSilva & Trkman, 2014). In fact, authors have shown how difficult it is to create a winning business model, especially in the era of disrupting ICT innovations (DaSilva et al., 2013). In light of this, a great variety of business models became ‘ICT-enabled’, since, after all, ICT provides organization with new channels for interacting
with customers (Wu, Guo, & Shi, 2013). Besides, there is yet a case to be made for sustainable business models (Stubbs & Cocklin, 2008), since sustainable business models are the ones interacting with and augmenting company’s resources, partnerships and relations with customers (Matos & Silvestre, 2013).

In regard to developing business models, we have seen an ample amount of companies (Singapore Airlines, Nestle, SHM etc.) possessing multiple business models in order to cope with different niches and preferences from end-users. Real-life business environment establish a need for using multiple business models (Martínez-Olvera, 2009); however, doing this might be a double-edged sword (Markides & Charitou, 2004). A great challenge to be addressed when companies try to utilize two different business models is that two (or more) business models will sooner or later interfere, causing conflicts. Two solutions were advised (Markides & Charitou, 2004); first, organization could physically separate both of the business models to avoid their interactions or, second, business models could be merged in order to exploit synergies.

There has been a common misunderstanding on how to distinguish a strategy from a business models. Not only due to similarities between these two but also because of the strategic function embedded in business models (Osterwalder, Pigneur, & Tucci, 2005). DaSilva and Trkman (2014) understand a strategy as a key determinant in the development of capabilities that enable future business models within an organization. Another distinction between strategy and a business model has been provided by (Casadesus-Masanell & Ricart, 2011); authors claim that “every organization has some business model”, whereas “not every organization has a strategy”. As business models are seen as a source of competitive advantage, the interplay between the strategy and the business models gained its importance (Zott, Amit, & Massa, 2011).

Finally, there is a business model innovation defined as ‘the discovery of a fundamentally different business model in an existing business’ (Markides, 2006), or as a quest for finding a new template on which an organization could create and capture value not only for its customers but also for its stakeholders (Spieth, Schneckenberg, & Ricart, 2014). Business model innovation can lead to organization achieving competitive advantage if the model is enough revolutionary and difficult for imitation by competitors (Teece, 2010). Incumbent businesses tend to elicit value from innovative ideas and disruptive technologies throughout their business models (Zott, Amit, & Massa, 2011). Interestingly, the process can work vice versa, since business models are often shaped by modern technology and innovations (Zott, Amit, & Massa, 2011). Business model or the development of business model can be seen as a stage between an idea growing from invention towards innovation (Dmitriev et al. 2014), however, with an emphasis on business model ensuring that not only technology is engraved but also that the innovation is economically sound (Chesbrough & Rosenbloom, 2002).
Methodology

We mapped the business models literature with bibliometric methods (Zupič & Čater, 2015). These methods use the citation information in bibliographical databases to extract meaningful information about the structure of scientific fields. The quantitative information gathered from bibliometric analysis can be a useful complement to the traditional structured literature review. Specifically, we used the methods of citation analysis, bibliographic coupling (Kessler, 1963) and co-word analysis (Callon, Courtial, Turner, & Bauin, 1983).

Citation analysis measures the influence of specific documents or journals by measuring their citation frequencies. If certain article or journal is more cited it is assumed it had greater influence on the literature than its less cited counterparts. Bibliographic coupling uses the similarity of reference lists to establish connections among scientific publications. For example, if ten publications appear in both reference lists of two scientific papers, this means that these two papers are connected with coupling strength of ten. The stronger the coupling strength, the stronger the connecting link. When this information is gathered for all relevant publications in the scientific field of interest, clustering methods can be applied to delineate the structure of the field and identify the substreams of research. Co-word analysis, on the other hand, connects the word terms by their appearance in the same title or abstract. If two terms appear together multiple times this means that the connection link between them is stronger. Again, putting together this information for the whole scientific field gives us a clear thematic picture of the field’s conversations.

We searched Thomson Reuters Web of Science (WoS) for “business model” in the topic (i.e. title, abstract or keywords) of published articles in the time period 2010-2015. We selected this period because we wanted to analyse the current conversations and not the past literature. The search returned 1533 entries, which we further filtered for Business, Management and Economics categories. Of the remaining 598 articles we selected only document types of ‘article’, ‘editorial material’ and ‘review’ which left us with 580 entries. The abstracts of all 580 documents were read and rated (Yes-include/Not-include) by two authors. Criterion for inclusion in the sample was that business model was one of central themes of investigation in the research study. Articles that only passingly mentioned business model concept were excluded from the sample. After rating the articles independently the interrater agreement was 86.4%. The differences on the remaining 79 articles were reconciled by re-reading the abstracts by both raters together and reaching decision whether to include the contentious article. After this process 308 articles were left.
4 Findings

We have conducted three types of analyses of business model literature. First, the citation analysis shows the most important publications outlets for contemporary business model research, which journals consist the knowledge base of business model research and which documents are the most cited within the literature. Second, the bibliographic coupling followed by the application of network community finding algorithm provides the structure of contemporary business model research that is based on the quantitative citation data. Finally, the co-word analysis of most important keywords in abstracts and titles shows the topical domain of business model research.

4.1 Citation analysis

Table 1 summarizes which journals published the most articles in the 2010-2015 period (left part of the table) and which journals are most cited (right part of the table). Profiles of journals that publish business model research reflect the main focuses of business model literature. First, there are strategy journals (Long Range Planning, Strategic Entrepreneurship Journal, Technology Analysis & Strategic Management and Strategic Organization) meaning that business model construct is of main interest to strategy scholars. Second, there are two premier journals oriented to practitioners (Harvard Business Review and California Management Review). This reflects that business models have value for managers. Third and most numerous group are innovation and technology management journals (Research-Technology Management, R&D Management, International Journal of Technology Management, Technological Forecasting and Social Change). These reflect that innovative business models are considered as a primary vehicle for commercializing technological innovations. Last two groups of journals are oriented to marketing (Industrial Marketing Management and Electronic Markets) and general management (European Management Journal, Management Decision and Chinese Management Studies). The absence of top tier management journals (like Academy of Management Review or Academy of Management Journal) in this list is notable. It looks like that business model research is mainly published in specialized outlets and management journals below top tier.

The list of 25 most cited documents in Table 1 is comprised almost exclusively of business model articles. The knowledge base of contemporary business model research is therefore dominated by previous business model studies with very weak outside influences. The most cited paper is Teece (2010) with 102 citations which means that almost a third of core business model articles published between 2010-2015 cited that paper. There are several authors that have multiple entries on the top 25 list: Christoph Zott and Raphael Amit have five co-authored articles on the list while Henry Chesbrough has four articles or books. The only document that is not part of business model research stream is Eisenhardt's (1989) paper on building theories from case study research. This reflects the fact that the majority of the empirical articles on business models are based on qualitative case studies.
Table 1: Top 25 most cited documents in business model literature

<table>
<thead>
<tr>
<th>No.</th>
<th>Document</th>
</tr>
</thead>
<tbody>
<tr>
<td>102</td>
<td>Teece DJ, 2010, V43, P172, Long Range Plann</td>
</tr>
<tr>
<td>91</td>
<td>Chesbrough H, 2002, V11, P529, Ind Corp Change</td>
</tr>
<tr>
<td>72</td>
<td>Morris M, 2005, V58, P726, J Bus Res</td>
</tr>
<tr>
<td>70</td>
<td>Zott C, 2011, V37, P1019, J Manage</td>
</tr>
<tr>
<td>70</td>
<td>Zott C, 2008, V29, P1, Strateg Manage J</td>
</tr>
<tr>
<td>70</td>
<td>Chesbrough H, 2010, V43, P354, Long Range Plann</td>
</tr>
<tr>
<td>58</td>
<td>Zott C, 2007, V18, P181, Organ Sci</td>
</tr>
<tr>
<td>47</td>
<td>Demil B, 2010, V43, P227, Long Range Plann</td>
</tr>
<tr>
<td>46</td>
<td>Eisenhardt KM, 1989, V14, P532, Acad Manage Rev</td>
</tr>
<tr>
<td>44</td>
<td>Osterwalder A., 2010, Business Model Gener</td>
</tr>
<tr>
<td>42</td>
<td>Mcgrath RG, 2010, V43, P247, Long Range Plann</td>
</tr>
<tr>
<td>38</td>
<td>Shafer S. M., 2005, V48, P199, Bus Horizons</td>
</tr>
<tr>
<td>28</td>
<td>Osterwalder A., 2005, V16, P1, Communications Ass I</td>
</tr>
<tr>
<td>27</td>
<td>Chesbrough H. W, 2006, Open Business Models</td>
</tr>
<tr>
<td>27</td>
<td>Timmers P., 1998, V8, P3, Electron Mark</td>
</tr>
</tbody>
</table>

4.2 Bibliographic coupling

We narrowed down the selection to articles that were cited at least two times per year. Before implementing bibliographic coupling we further excluded 14 articles with coupling strength less than 20 (i.e. which share less than 20 common pairs of references with all other articles; the data about these articles is insufficient for coupling and we can assume these articles are not part of the core document set). After these steps, 62 articles
were left in the sample. We have visualized four clusters of business model research in Figure 1.

Cluster 1 (red) is the largest with 22 articles. The dominant theme is the interface between technological innovation and business model of the firm. Main topics in this cluster include the role of technological innovation (Baden-Fuller & Haefliger, 2013; Bohnsack, Pinkse, & Kolk, 2014) and technological discontinuities (Sabatier, Craig-Kennard, & Mangematin, 2012), the cognitive aspect of business model concept (Baden-Fuller & Mangematin, 2013; Martins, Rindova, & Greenbaum, 2015) but also reviews of the field (Zott, Amit, & Massa, 2012).

Cluster 2 (green) contains 19 articles. The vast majority of authors in this cluster are focusing on understanding the idea (concept) of a business model by identifying and explaining its meaning (DaSilva & Trkman, 2014). Authors execute ‘sensemaking’ out of business models and try to make them context-dependent with regard to organizational strategy. A major question in this cluster is the distinction between business model and strategy (Casadesus-Masanell & Ricart, 2010). Additionally, the authors examine what is the role of business model when constituting strategies. In light of ‘sensemaking’, some of the authors have pursued their research to elucidating changing meaning of the business models, how the business model notion is changed due to the environment, and how to distinguish between various business models.

Cluster 3 (blue) has 12 articles. It is predominantly strategy-based and the core of this cluster is represented by several publications of the 2010 Long Range Planning special issue on business models (e.g., Wirtz, Schilke, & Ullrich, 2010; Teece, 2010; Zott & Amit, 2010).
Cluster 4 (yellow) is the smallest with 9 articles. The topics in this cluster are predominantly rooted in marketing themes. For example, the papers in this cluster explore the definition of markets as configurations (Storbacka & Nenonen, 2011a; Storbacka & Nenonen, 2011b), the usefulness of business models construct for service-based companies and the integration of products and services (Kindström, 2010; Kindström & Kowalkowski, 2014; Barquet, de Oliveira, Amigo, Cunha, & Rozenfeld, 2013), solution business models (Storbacka, Windahl, Nenonen, & Salonen, 2013; Storbacka, 2011) and business models in project-based firms (Kujala, Artto, Aaltonen, & Turkulainen, 2010; Kujala et al., 2011).

4.3 Co-word analysis

We visualized the text in abstracts and titles with co-word analysis. 6170 different terms are used in 308 abstracts. We selected top 133 terms with at least 10 appearances (multiple appearances in same document count only once). We visualized 60% of the most relevant terms, resulting in 80 keywords. We further filtered out keywords that were research-related, like 'methodology', 'findings' and similar. We visualized remaining keywords with heat-map in Figure 2. Warmer areas (red and yellow colours) represent more frequently used keywords and their proximity means that the terms are often used together.

![Figure 2: Co-word analysis of titles and abstracts of business model publications](image-url)
The area on the right shows papers emphasizing the importance of business model innovation, its meaning in change management and its role, especially in terms of enhancing organizations’ performance, as emphasized by Casadesus-Masanell and Ricart (2011). Furthermore, central cluster of keywords confirmed business model as the most important ‘tool’ for delivering value to customers; however, the value cannot be elicited from business model if organizations lack cutting-edge technology. In fact, not only technology but also various elements and capabilities play an important role when it comes to refining a business model (Trkman et al., 2015). Another two (centre-left corner and top-left corner) clusters have pointed out that business model is redeemed as a system or a concept encircled around its focal element—product.

5 Discussion

In preliminary research we examined the 308 articles on business models published in the period 2010-2015. In further research we will also examine articles before 2010 and articles published in 2016. Business model topic has covered the emergence of e-businesses and surge of technology innovations that influenced the vast majority of organizations. It can be discussed how much a business model is context-dependent, nevertheless, the future research should give us more information about business models’ elements and the interplay between them. Further, by examining articles published in different periods thoroughly, we tend to investigate how the business model research has changed over time and, second, contemplate which future avenues are most likely to be addressed.

The results of the citation analysis of the papers and the four identified clusters by bibliographic coupling jointly paint a coherent picture of the business model research. The disciplinary landscape spans from technological innovation through strategy to marketing. This is reflected in the journals that publish business model research, which also include practitioner outlets like Harvard Business Review. This makes the business model construct uniquely positioned to integrate the supply- and demand-side approaches to strategy (Priem, Li, & Carr, 2012).

6 Conclusion

We used bibliometric methods to examine state of the art of business model research. We identified the most influential documents in contemporary literature, divided the literature into four clusters and visualized its topical structure. Our analysis provides a useful tool for both veteran and new researchers who want to move the field forward.

6.1 Limitations

Bibliometric methods have several well-known limitations. First, it is not possible to determine based on solely citation data why certain document was cited. It could be because the citing author(s) thought the cited reference was important foundation for their
work, but it could be also to refute the claims in cited document or ritually cited because certain citations (usually of old, important and widely cited publications) are expected in the specific scientific fields. Second, our analysis encompasses the most cited works and most used keywords. It is possible that some smaller research substreams were missed even though they could comprise an important but less cited niche. Finally, we have deliberately taken into account only categories "business", "economics", and "management" as we wanted to thoroughly examine the articles published in these mainstream areas. We tend to expand that in further research.

6.2 Further research

First, researchers could pursue the question why the ‘conversations’ of business models are usually happening only within a certain ‘bundle’ (Zott, Amit, & Massa, 2011) and what would be the implications of an interplay between these various sub-areas. Second, researchers could initiate follow-up studies on co-word analysis, evaluating whether a synergy between these sub-areas enabled the proliferation of incumbent business models (e.g. sustainable business models). Finally, taking into consideration the results of our inquiry from the journals could lead researchers to a better understanding of the fields and industries interfering with the continuous development of business models.

References


