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Business model innovation: towards a conceptual framework

A inovação nos modelos de negócios: rumo a um quadro conceptual

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Abstract

Business model innovation (BMI) is core for entrepreneurship in industrial or service sectors, including tourism. Our submission focuses on the development of the field of BMI. We perform systematic literature review based on 316 valid papers indexed on ISI Current Contents, published between 2000 and 2015.

Bibliometric results indicate a significant increase in the number of papers, journals and authors, and lack of specialized journals/authors publishing regularly in the BMI field. Thematic analysis reveals that BMI has been extensively studied, however there is rarely any cumulative knowledge effect between authors. Most researches were conceptual or qualitative, however few constructs have been defined and tested to enable quantitative studies.

We conclude that there had been little evolution in terms of theoretically developing the BMI field. We argue that there is a need to adopt already existing conceptual models, develop constructs and validate them with primary quantitative data and advanced statistical analysis, in different research contexts.

Keywords: Business model, business model innovation, business model elements, knowledge visualization, visual mapping, NVivo.

Resumo

A inovação nos modelos de negócios (BMI) é necessária para ações de empreendedorismo em setores industriais ou nos serviços, incluindo o turismo. O presente artigo foca-se no desenvolvimento do campo teórico de BMI. Realiza-se uma revisão sistemática da literatura com base em 316 artigos válidos para a temática estudada, indexados na ISI Current Contents e publicados entre 2000 e 2015.

Os resultados da análise bibliométrica apontam para um aumento significativo no número de artigos, revistas científicas e autores, e ainda para a ausência de revistas científicas e autores especializados, com publicações regulares na área de BMI.

A análise temática revela que a área do BMI, embora estudada extensivamente, raramente se carateriza por um efeito cumulativo do conhecimento entre os respetivos autores. A maioria das investigações realizadas têm natureza conceptual ou qualitativa, no entanto poucos constructos foram adequadamente definidos e testados de modo a permitir estudos quantitativos subsequentes. As conclusões apontam para uma evolução limitada no que respeita ao desenvolvimento teórico do campo de BMI. Considera-se que existe a necessidade de adotar os modelos conceptuais já publicados, desenvolver constructos adequados e validar os modelos com dados primários quantitativos e análise estatística avançada.

Palavras chave: Modelo de negócio, inovação nos modelos de negócios, componentes de modelos de negócio, visualização de conhecimento, mapeamento visual, NVivo.

1. Introduction

Business models may be defined as a group of elements that allow to configure a firm's business, while Business Model Innovation (BMI) implies performing changes in those elements or in the used combination of elements so as to increase the value created by the firm, and has been an increasingly popular topic for scholars in the last decades due to societal and market changes and the adoption of the open innovation paradigm (Amit & Zott, 2012; Chesbrough, 2010; Zott, Amit, & Massa, 2011).

In the last 15 years, several tools have been proposed, the relationship of business models with strategy and entrepreneurship has been addressed (Casadesus-Masanell & Ricart, 2010), as well as relationship with performance, while in the latest years the focus has switched to encompass, as well, the challenges raised by e-business, social enterprises, open and collaborative innovation, value creation and sustainability and focus on the client/beneficiary as centre of the business model (Demil, Lecocq, Ricart, & Zott, 2015; Girotra & Netessine, 2013; Hacklin & Wallnofer, 2012; Ogilvie, 2015; Roy & Karna, 2015; Zott et al., 2011). However, the cumulative logic of science only imperfectly applies to this field, as we will point out in our results, as future research directions of more recent papers sometimes point the need to study results that have been already obtained.

In order to fill the identified gap, the current research aims to create knowledge by integrating the research published in journals with impact factors in the area of BMI, between 2000 and 2015.

To develop our research, we perform a systematic literature review (Saur-Amaral, Ferreira, & Conde, 2013; Tranfield, Denyer, & Smart, 2003), following a three step approach:

planning (development of the review protocol), searching (implementing the review protocol by two independent researchers), and reporting (analysing results and developing literature maps).

We use as scope ISI Web of Science - Current Contents Connect, filtered on Social & Behavioral Sciences, as this database is a worldwide scientific database recognized among the academia in any field of knowledge, where impact factor journals are currently indexed.

Next, we export results to Endnote X7 and perform a first selection of valid results. Finally, we perform statistical and content analysis so as to identify key journals, authors, methodologies and tools for BMI, as well as key research questions and future research directions for research paths identified in the previous phase. We use in NVivo 11 to build thematic maps.

Our paper is organized as follows. First, we describe in the methodology chapter the relevant aspects for the systematic literature review. Second, we present the results obtained from the systematic literature review, namely descriptive statistics on relevant sample, as well as top authors, publication years, top journals, content analysis results and literature maps with key identified schools of thought and key thematic areas of study. Finally, we end with a critical discussion and indicate future research directions.

2. Research methodology

This research is conceptual and build on data collection from an academic bibliographic database where impact research is indexed.

Our methodological options unfolded between traditional literature review, systematic literature review and meta-analysis (Jesson, Matheson, & Lacey, 2011; Saur-Amaral et al., 2013; Tranfield et al., 2003). The latest is used when large quantity of standardized quantitative studies have been developed, which was hardly the case in BMI, so we eliminate this option at start.

On one hand, traditional review had been criticized extensively as it is seen to be unable to produce reliable evidence and was indicated as norm for undergraduate studies, yet unfit for postgraduate or scientific research studies, due to the lack of search protocols and author subjectivity in selecting the papers to be analysed (Jesson et al., 2011; Petticrew & Roberts, 2006; Saur-Amaral et al., 2013). On the other hand, systematic literature reviews allow to overcome these limitations as they allow to plan, pursue transparent data selection procedures, and combine statistical analysis with thematic analysis (Briner & Denyer, 2012; Denyer & Tranfield, 2009; Kofinas & Saur-Amaral, 2008; Pittaway & Cope, 2007; Saur-Amaral & Amaral, 2010; Saur-Amaral & Kofinas, 2010).

Taking into account the criticism, we opt for systematic literature review, and we apply the three steps associated to this type of literature review (see Table 1).

Table 1 – The process of a systematic literature review

Steps	Methodological concerns
Planning the review: • **Why do a review?** • **Prepare review proposal** • **Develop a review protocol**	May require previous studies to better understand the field and identify alternative ways on how the topic has been previously addressed. The review protocol should contain a conceptual discussion of research problem. Keywords and search terms should be identified.
Conducting the review: • **Identify research** • **Select studies** • **Assess their quality** • **Extract data** • **Synthesize data**	Should be a comprehensive, unbiased search, rigorously applying the review protocol and the inclusion/exclusion criteria. Search should be reported in sufficient detail to ensure replicability. Disagreement between reviewers should be explained and consensus should be reached. The output of the search should be the full list of relevant results.
Reporting and dissemination: • **Developing the report** • **Dissemination into practice**	Should be clear and effective. Two types of reports can be produced: descriptive analysis of all results (most relevant authors, journals etc.) and thematic analysis (emergent themes and research questions).

Source: Saur-Amaral et.al, 2013, adapted from Tranfield et. al, 2003.

After a previous unstructured review of topic, we develop the search protocol to support the systematic literature review (identification of keywords, planning and definition of search criteria, definition of filters and rules for valid results).

Two independent researchers, after developing the review protocol, strictly perform the search on ISI Web of Science – Current Contents, recording all the steps applied and comparing intermediate and final results, so as to allow transparency and replicability of the research.

Next, we export the results to Endnote X7, where we perform the preliminary relevance analysis and selection of valid results based on abstracts. We import full text files into NVivo 11 for content analysis and code, using as an orientation framework the most frequent words in abstracts and build node categories in a grounded theory approach (Charmaz, 2006).

We use queries to explore results, and build literature maps using the Project Map functionality in NVivo 11 in order to develop the final thematic maps.

3 Systematic Literature Review

The search was performed on December 15, 2015, in three different moments (Search 1, Search 2 and Search 3):

- **Search 1** had as search equation "business model innovation" IN Topic, Social & Behavioural Sciences (SBS) database of ISI Current Contents, with a timespan filter of publication date between 2000 and 2015 (date of search). We obtained 80 results. We next filtered on document type Article or Review and on subject area Business and Economics. We obtained 62 results.
- **Search 2** had as search equation "business model" AND innov* IN Topic, Social & Behavioural Sciences (SBS) database of ISI Current Contents, with a timespan filter of publication date between 2000 and 2015 (date of search). We obtained 388 results. We next filtered on document type Article or Review and on subject area Business and Economics. We obtained 296 results.
- **Search 3** had as search equation "business model" AND design IN Topic, Social & Behavioural Sciences (SBS) database of ISI Current Contents, with a timespan filter of publication date between 2000 and 2015 (date of search). We obtained 229 results. We next filtered on document type Article or Review and on subject area Business and Economics. We obtained 156 results.

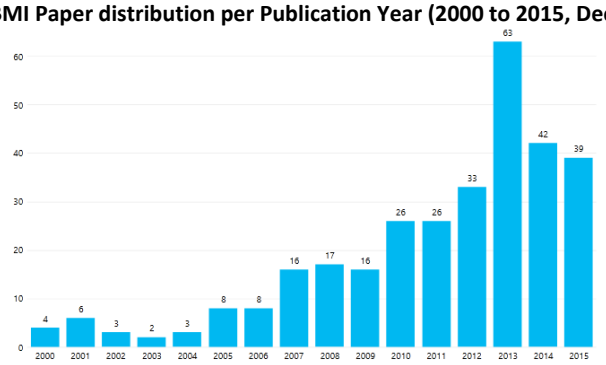
We combined the three searches using Search History functionality in ISI Current Contents, so as to ensure there were no duplicates records in the final sample. These three searches gave us a starting sample of 514 articles, which was our working sample, which was exported to Endnote X7. From Endnote, we created a Subject Bibliography file with all abstracts, organized by publication years.

The two researchers performed separately the relevance analysis, reading all abstracts and putting aside those that were not related with BMI, according to our initial research goal. A joint working session between researchers allowed to compare results. All abstracts were analysed again and differences between individual results were scrutinized, compared and consensus was reached. After the relevance analysis was concluded, our working sample was reduced to 316 relevant articles. These articles were exported to an .xml file and next imported into NVivo where we generated the data used for descriptive statistics and performed the coding procedures.

Descriptive statistics

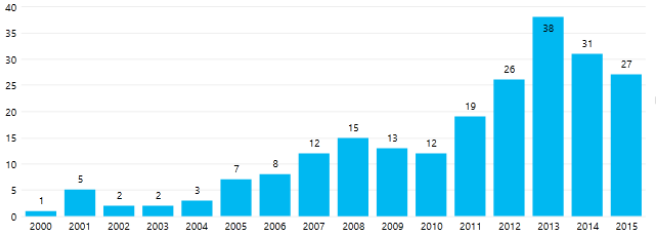
Regarding paper distribution per year (see Figure 1), there has been an ascendant tendency from 2000 to 2013. In 2014 and 2015, the number of papers went back to numbers similar to 2012.

Figure 1 - BMI Paper distribution per Publication Year (2000 to 2015, December 15)



A similar tendency is observed when coming to the number of journals that published papers on BMI over the years (see Figure 2). In 2015, the total number of journals that published papers on BMI was 27. Concerning scientific journals that were most representative in terms of number of publications in the latest years (see Figure 2), in top 5 we find Long Range Planning, Harvard Business Review, Industrial Marketing Management, Management Decision and Research-Technology Management, showing a balance between traditional academic journals and business- or executive-oriented journals.

Figure 2 – Number of Journals per Publication Year (2000 to 2015, December 15)



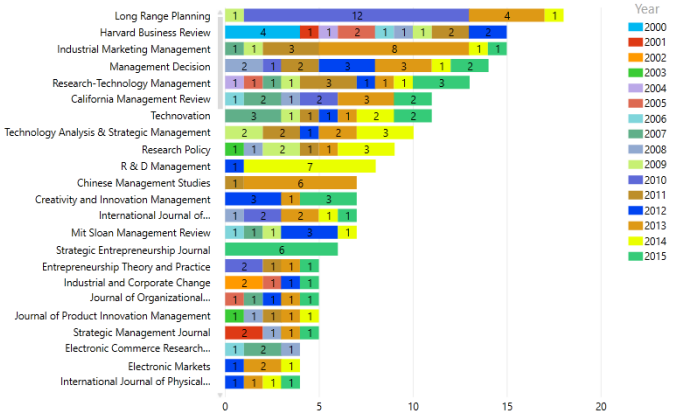
The distribution of papers per year shown in Figure 1 indicates that there is hardly a specialization in publishing papers on business models or business model innovation. Top 5 journals represent 25% of all publications (see Table 2) in our working sample.

Table 2 – Top five journals per number of papers published (2000 to 2015, December 15)

Journal	Percentage of total papers published
Long Range Planning	6%
Harvard Business Review	5%
Industrial Marketing Management	5%
Management Decision	5%
Research-Technology Management	4%

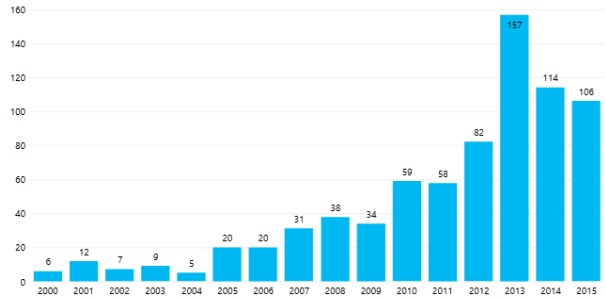
The distribution of papers on BMI in the most significant journal is presented in Figure 3 and as it can be observed, the journals that most contributed to this trend are Long Range Planning, Harvard Business Review, Industrial Marketing Management, Management Decision and Research-Technology Management, with about one fourth of the published papers.

Figure 3 – Papers published per Journal (2000 to 2015, December 15)



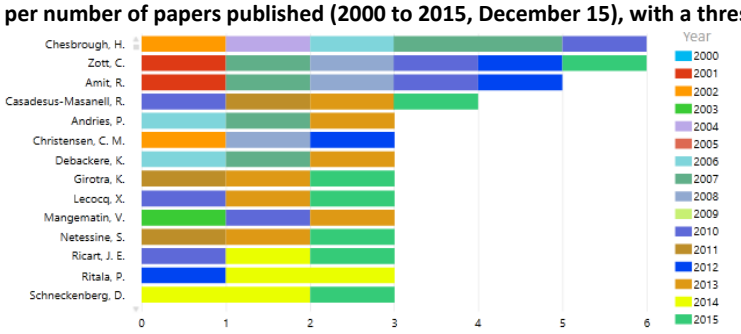
The involvement of the academic community in the research on business models has registered a relevant increase over the years. A total of 664 different authors published papers on BMI, with the distribution reaching the peak in 2013 (see Figure 4), when 157 different authors were registered. In 2015, 106 different authors were involved in the publications on BMI.

Figure 4 - Number of distinct authors that published BMI papers each year



However, in spite this growing popularity of the subject, the analysis of top authors (see Figure 5), illustrates that there is no specific author recognized in the field of BMI, in impact factor journals. Chesbrough, Zott, Amit and Casadesus-Masanell, the authors on top of the list, only published 4 to 6 papers in the last 15 years.

Figure 5 – Top authors per number of papers published (2000 to 2015, December 15), with a threshold of three papers



To sum up, the subject of BMI shows a clear trend of increasing popularity among scholars, since the number of published papers in scientific journals with impact factor in the last 15 years, the number of authors involved and the number of journals that gave attention to the topic has grown considerably. These are indicators that support the argument that there is a grow interest in the field that may allow critical mass to start consolidating the BMI field.

Thematic Analysis

Coding in NVivo 11 followed a grounded theory approach. At the beginning of the process, a Word Frequency Query was performed in all abstracts, in order to identify emergent themes. As it may be observed in Figure 6, beside the expected relevance of business model innovation, words like firms, service, design, activities, customer, product development, management, market, technology, strategy, value, performance are also significant.

Figure 6 – Word Frequency Query based on all abstracts in the sample (NVivo 11)

Next, two researchers divided the set of data and coded independently, and afterwards the coding structure was revised and categories were merged and integrated in a common node structure. Coding results (thematic analysis and visual mapping) are presented and explained in the remaining part of this section.

The sample included conceptual, opinion and business-oriented (associated e.g. to California Management Review or Harvard Business Review) papers, out of which there was a majority of empirical papers. This supports the argument of a continued interest of the traditional academic scholars in analysing the concept of business model innovation, including empirical research.

Research questions presented in the sample were quite diverse. Networked Business Models (BM), the relationship between BM and Performance, BM and Technology, BM and Intellectual Capital (and Intellectual Property issues) or BM and Sustainability, the issue of BM Portfolio and its management, BM adaptation (or innovation) and even BM Barriers and Opportunities, are some of them. A complete list is visually mapped in Figure 7.

Figure 7 – Research problems typologies (Project Map based on final node structure, NVivo 11)

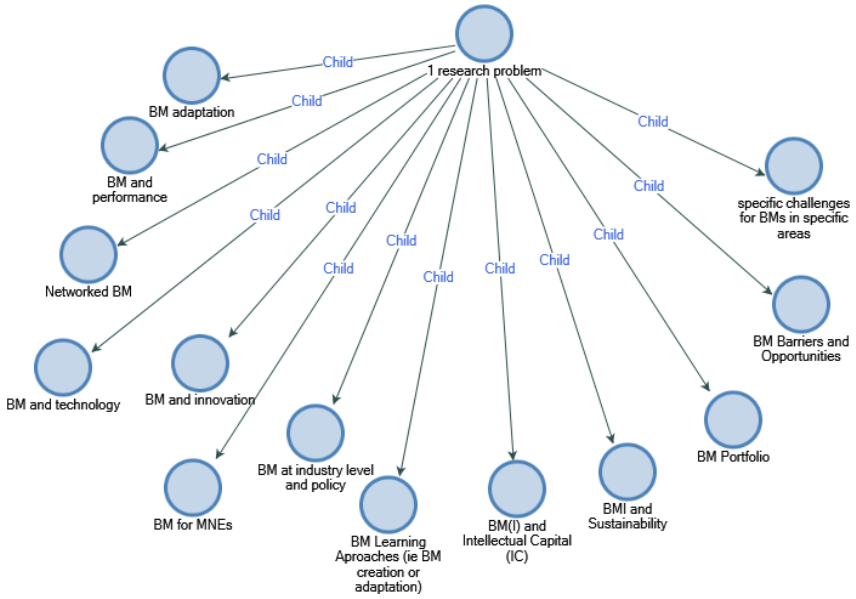


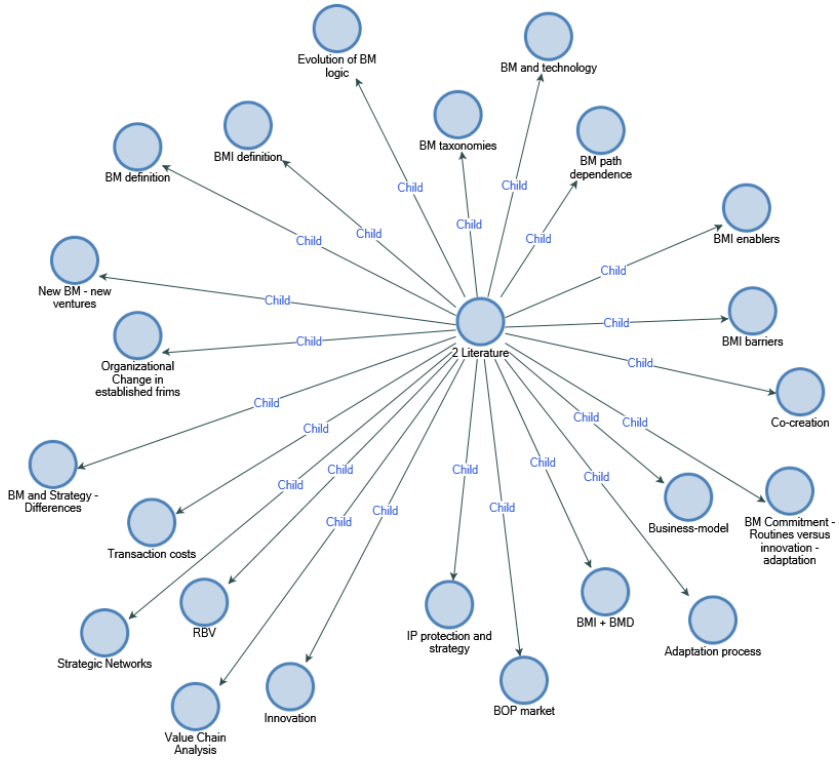
Table 3 showcases a set of examples of the research questions we encountered in our sample, which are mostly exploratory and of qualitative nature, indicating a still unconsolidated theoretical field.

Table 3 – BMI research questions and methods: examples

Research Question	Citation	Methods
BM adaptation	"*how to change business models?*" (Arend, 2013)	Conceptual analysis
Networked Business Models (BM)	"*translate into better internal organization […] for multidivisional companies*" (Arend, 2013)	Conceptual analysis
BM and performance	"*relationship between adaptation and performance in new businesses and possible moderators*" (Andries & Debackere, 2007)	Survival analysis
BM and technology	"*how do technology and business models interact?*" (Baden-Fuller & Haefliger, 2013)	Conceptual analysis
BM and innovation	"*how the use of business models by research-based spin-offs is related to their innovativeness"* (Clausen & Rasmussen, 2013)	Regression
BM for multinationals	"*how do business models evolve at the corporate and business unit level?"* (Aspara, Lamberg, Laukia, & Tikkanen, 2011)	Case study
BM learning approaches	"*combined influences of complexity, ambiguity and experience effects on the performance of these learning approaches*" (Andries & Debackere, 2013)	Dynamic computer stimulation
BM and intellectual capital	"*practical implication of deploying intellectual capital methods in an organization and its impact on a form's BMI and decision-making processes"* (Burton, O'Connor, & Roos, 2013)	Case study
BMI and sustainability	"*effects that can be achieved through BMI, in particular organizational sustainability*" (Carayannis, Sindakis, & Walter, 2015)	Case study
BM portfolio	"*how to manage more than one model simultaneously*" (Arend, 2013)	Conceptual analysis

Theoretical reviews included in the papers, surprisingly ranged from insufficiently grounded (in the case of more business-oriented articles) to very well prepared. There were conceptual papers in our sample, however there was no systematic literature review in our working sample, which we see as a gap. All identified topics are shown in Figure 8.

Figure 8 – Topics approached in Literature Reviews (Project Map based on final node structure, NVivo 11)



The definitions of BM and BM innovation were a starting part of most papers and, in spite of several papers that analysed the different definitions, e.g. Carayannis et al. (2015), too many authors had a rather similar discourse and reanalysed the same background to adopt or to suggest another definition, which may indicate some theoretical inefficiency.

Different theoretical strands are present in the sample, ranging from Transaction Cost theory, to Value Chain Analysis, Innovation, Resource-based View and Strategic Networks. See e.g. Amit and Zott (2001, 2012); Basile and Faraci (2015); Benson-Rea, Brodie, and Sima (2013); Bertels, Koen, and Elsum (2015); Cavalcante, Kesting, and Ulhoi (2011); DaSilva and Trkman (2014); Zott and Amit (2013) for interesting presentation of key elements of these theories.

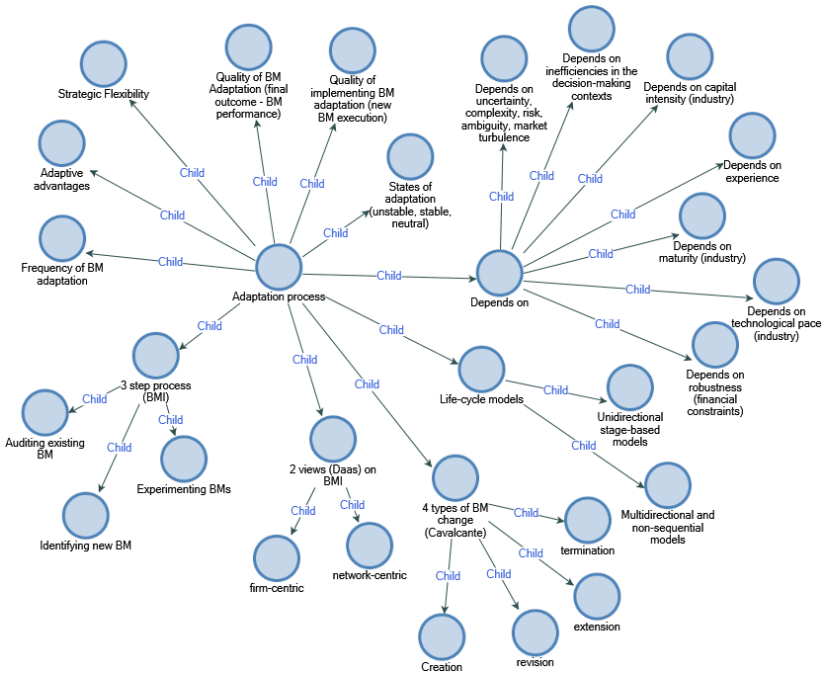
Different opposed themes were analysed, in the same or in separate papers, e.g. new ventures versus established firms, or BM enablers versus BM barriers.

For instance, new ventures have specific BM components, including financial and management (in)dependence, frequently appear as based on technologies or networked participation e.g. Andries and Debackere (2007); Chesbrough (2010); Loch, Solt, and Bailey (2008); Zott and Amit (2010). Established firms are focused on BM adaptation and innovation, e.g. Bock, Opsahl, George, and Gann (2012); Bohnsack, Pinkse, and Kolk (2014); Cavalcante et al. (2011); Gerasymenko, De Clercq, and Sapienza (2015); Koen, Bertels, and Elsum (2011); Zucchella and Urban (2014), while some commit to the routines of the existing BM or to path dependence, e.g. Andries and Debackere (2013); Schmidt (2009), avoiding risky changes in the operations.

Moreover, while identified BM enablers are related e.g. to product or process innovations, profit expectations, inefficient revenue model, changes in market (Bucherer, Eisert, & Gassmann, 2012), organizational design for innovation (Carayannis et al., 2015), BM barriers e.g. lock-in behaviours, specific managers, high perceived risk associated to change (Chesbrough, 2010) hinder the development of new BM, as path dependency also does.

Regarding, more specifically, the BM adaptation process, which may lead to BM innovation if results supersede investments, different aspects are taken into account (see Figure 9) and different aspects are addressed.

Figure 9 – Topics approached in Literature Reviews on BM Adaptation process (Project Map based on final node structure, NVivo 11)



A three-step process for BMI is suggested (Girotra & Netessine, 2013), including (i) auditing existing BM, (ii) identifying new BM alternatives and (iii) experimenting them before taking a decision. Daas, Hurkmans, Overbeek, and Bouwman (2013) suggest two different approaches in BMI: a) firm-centric, where focus lays upon the firm only, and b) network-centric, where focus shifts from firm to the network.

Cavalcante et al. (2011) introduce four types of BM change: creation (initial phase), revision, extension and termination, somehow related to the life-cycle models suggested by Andries and Debackere (2006, 2013), and to the adaptation states allowing lower or higher immunity from changes in the environment (Andries & Debackere, 2007).

The influencing factors are also defined: uncertainty, complexity, risk, ambiguity, market turbulence (Andries & Debackere, 2007, 2013; Ghezzi, Cavallaro, Rangone, & Balocco, 2015; Rohrbeck, Konnertz, & Knab, 2013), inefficiencies in decision-making contexts (Girotra & Netessine, 2013), industry constraints (e.g. maturity, technological pace, capital intensity), experience in BM change and robustness of previous decisions and (in)dependence (Andries & Debackere, 2007).

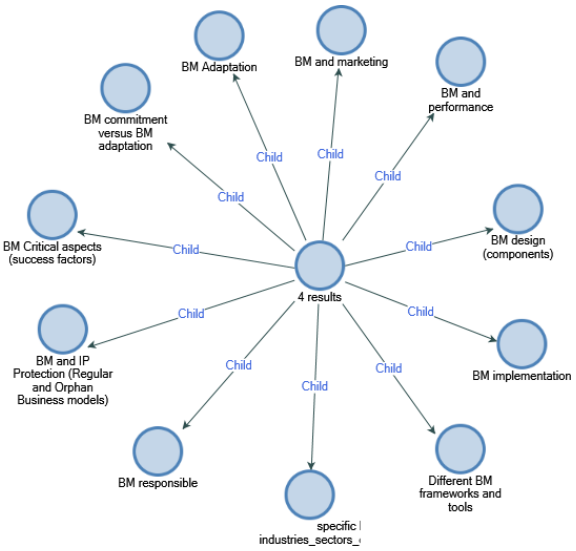
The frequency of BM change, the quality of the end-result, the quality of the implementation (Andries & Debackere, 2007), as well as the adaptive advantages gained (Maglio & Spohrer, 2013) are also addressed in the analysed papers.

Regarding methods, there were scarcely any models to orientate empirical research, which may be due to the high proportion of qualitative studies.

This sustains previous remarks on the exploratory stage of research in this field. Nonetheless, quantitative research emerged in the latest years, based on secondary data analysis, e.g. Cucculelli and Bettinelli (2015); Cucculelli, Bettinelli, and Renoldi (2014); Gerasymenko et al. (2015); Kim and Min (2015); Landry, Amara, Cloutier, and Halilem (2013); Li (2011) with econometric approaches or structural equation modelling. It is quite seldom, however, that primary data collection is performed with survey-based questionnaire, which is a gap to fill.

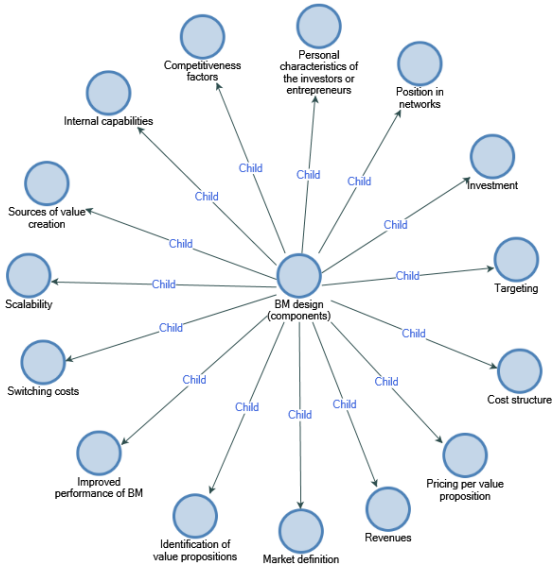
Results are quite varied as can be seen in Figure 10. Specific results are next presented in more detail.

Figure 10 – Types of Results obtained (Project Map based on final node structure, NVivo 11)



BM design components (see Figure 11) are duly identified (Adebanjo, 2010; Alt & Zimmermann, 2014; Amit & Zott, 2001; Daas et al., 2013; Mangematin et al., 2003) and can be grouped into one common framework to be further validated and subject to construct development.

Figure 11 – Components of BM Design identified in the Results (Project Map based on final node structure, NVivo 11)

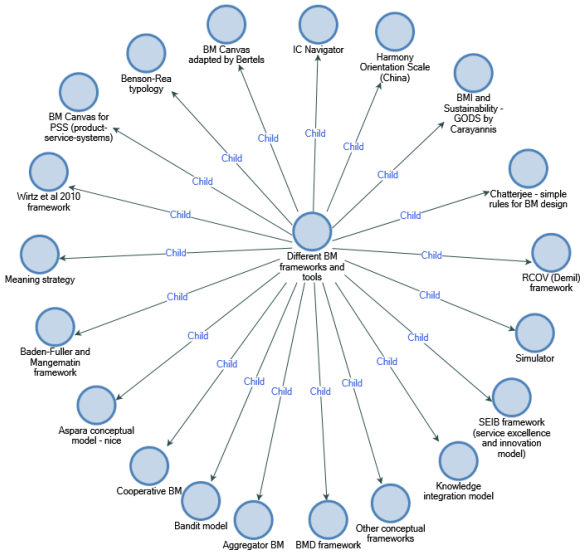


Identified BM design components may be used for new ventures or established firms, as long as the critical success factors are taken into account e.g. ensuring actor participation in BM change, decoupling products, services and technologies from the business model, allowing for strategic flexibility and combinative capabilities, reducing structural complexity or managing outsourced / co-developed / co-partnered components of the BM (Adebanjo, 2010; Alt & Zimmermann,

2014; Bock et al., 2012; Dahan, Doh, Oetzel, & Yaziji, 2010; Fikirkoca & Saritas, 2012) and due attention is given to risks, BM implementation and organizational anchoring (Bertels et al., 2015; Bjorkdahl, 2009; Brea-Solis, Casadesus-Masanell, & Grifell-Tatje, 2015; Bucherer et al., 2012).

Different BM frameworks and tools have been proposed in our working sample, with huge differences in scope as can be observed in Figure 12.

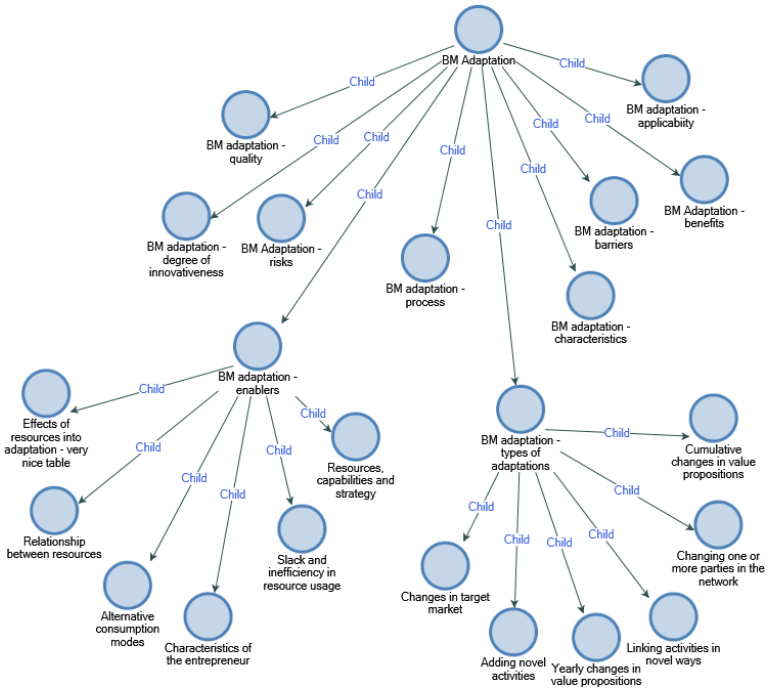
Figure 12 – Overview of BM frameworks and tools identified in the Results (Project Map based on final node structure, NVivo 11)



Ranging from adaptation of the Business Canvas in different settings (Barquet, de Oliveira, Amigo, Cunha, & Rozenfeld, 2013; Bertels et al., 2015), RCOV framework (Demil & Lecocq, 2010), Baden-Fuller and Mangematin (2013) or Benson-Rea et al. (2013) approach, GODS framework linking BMI and sustainability (Carayannis et al., 2015) or even completely different tools like the Harmony Orientation Scale (Chow & Yau, 2010) that incorporates Chinese Guanxi as key success factors, there are tools for a wide variety of contexts.

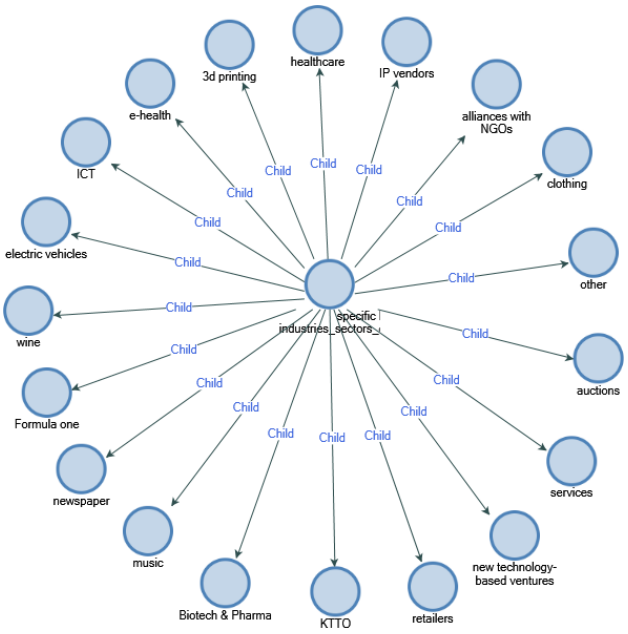
BM adaptation has been thoroughly analysed, as well, and there is correspondence to the topics approached in the literature reviews. The types of adaptations present in the results (see Figure 13) are more fine-grained (Amit & Zott, 2012), new enablers are listed (Andries & Debackere, 2006, 2007; Aspara, Lamberg, Laukia, & Tikkanen, 2013; Baumeister, Scherer, & von Wangenheim, 2015; Bicen & Johnson, 2015; Pateli & Giaglis, 2005) and new elements appear, e.g. BM's degree of innovativeness (Bucherer et al., 2012).

Figure 13 – Overview of BM Adaptation as identified in the Results (Project Map based on final node structure, NVivo 11)



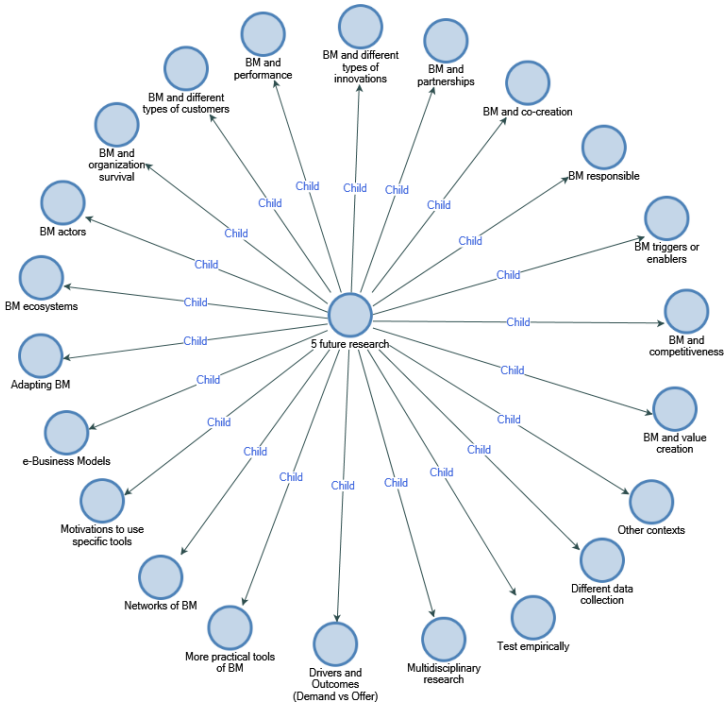
Furthermore, specific BM have been proposed for certain industries or situations (see Figure 14), which was the focus of a large number of papers from our sample (Cautela, Pisano, & Pironti, 2014; Cucculelli & Bettinelli, 2015; De Regge et al., 2015; Kindstrom & Kowalkowski, 2014; March-Chorda, Yague-Perales, & Seoane-Trigo, 2009; Richter, 2013; Ritala, Golnam, & Wegmann, 2014; Sabatier, Mangematin, & Rousselle, 2010; Sibinda, 2008; Solaimani, Guldemond, & Bouwman, 2013; Sorescu, Frambach, Singh, Rangaswamy, & Bridges, 2011; Storbacka, 2011; Visnjic Kastalli, Van Looy, & Neely, 2013; Warnier, Weppe, & Lecocq, 2013; Wells & Seitz, 2005; Wilson & Post, 2013; Wirtz, Schilke, & Ullrich, 2010). However, resulting BMs are not validation of a conceptual BM, but exploratory endeavours, which limits their potential deductive role and it is a sign of inefficiency.

Figure 14 – Overview of specific BMs identified in the Results (Project Map based on final node structure, NVivo 11)



Next, we present an overview of research directions suggested in our sample (see Figure 15)

Figure 15 – Overview of future research directions (Project Map based on final node structure, NVivo 11)



Future research directions are, in some sense, puzzling, as they point towards research topics that had already been addressed (note that we did take into account the year of publication), a sign perhaps of lack of knowledge of previous works. There is very little novelty in the future research that had not been studied before. For instance, Carayannis et al. (2015) suggests as future research the possibility to explore the role of the value chain network, which is already part of the literature review with consolidated insight already identified, or e.g. Kindstrom and Kowalkowski (2014) that point a lack of studies on business model innovation processes, something which is already part of the results of previous studies.

4. Discussion and conclusions

Results demonstrate that the number of studies in the BMI field has grown significantly. Nevertheless, there is no specialization, as the yearly number of papers is low (per author and per journal). Top five journals (Long Range Planning, Harvard Business Review, Industrial Marketing Management, Management Decision and Research-Technology Management) and top four authors (Chesbrough, Zott, Amit and Casadesus-Masanell) are a must read for any scholar developing research in the BMI field and there is space for new scholars to enter this field and further develop it, including doctoral researchers.

The results of thematic analysis showed that BMI has been widely investigated, however, to best of our knowledge there is few cumulative knowledge effect between scholars. The considerable amount of studies were conceptual or qualitative, however most of the constructs in these studies had not been conceptualised through quantitative studies. There is a limited number of conceptual models tested in empirical studies, mostly descriptive. The case studies or archival analysis (e.g. analysis of web data) have reduced inductive capacity. Very few studies used secondary data and quantitative analysis approaches.

It is concluded that there is a need for quantitative studies, so that results may be generalized to a wider population and their implications and benefits for practice and policy may be registered.

It should be noted that there had been a small amount of progress in terms of integrating and theoretically developing the BMI field. In the current study, it is discussed that there is a need to adopt the existing tested models, conceptualise and develop constructs in order to validate them by new data collection and statistical analysis (regression or structural equation modelling) in various contexts. We suggest that it is highly essential to promote collaboration between scholars in this field in order to help each other to enhance existing literature to be able to have much more efficient works which is eventually produce valuable knowledge in BMI field.

Several papers lack efficient cumulative knowledge building and it seems as the academic community around business models may disperse, we conclude that there are some key sources that may be consulted for a more focused literature review in BMI-related research so as to allow cumulative knowledge development and avoid repetition.

- For a history of the BM concept, DaSilva and Trkman (2014) is a very interesting reading, while BM taxonomies can be found e.g. in Benson-Rea et al. (2013); Bertels et al. (2015); Carayannis et al. (2015); Chatterjee (2013).
- Different perspectives over BM are presented e.g. by Baden-Fuller and Haefliger (2013); Zott and Amit (2013) and Bertels et al. (2015). Criticism is present e.g. in Arend (2013); Baden-Fuller and Haefliger (2013); Baden-Fuller and Mangematin (2013); Carayannis et al. (2015) or Zott and Amit (2013).

Regarding the usefulness of our results presented in the previous section, the visual maps allow identifying themes and topics for future research, as well as specific frameworks (Benson-Rea et al., 2013; Bertels et al., 2015; Demil & Lecocq, 2010).

If aiming to research a specific industry, we suggest to search BMI research in that specific area (Cautela et al., 2014; De Regge et al., 2015; Kindstrom & Kowalkowski, 2014; Solaimani et al., 2013), and validating models that have already been validated in that area. If looking for barriers (Chesbrough, 2010) and enablers (Andries & Debackere, 2006, 2007; Aspara et al., 2013; Bicen & Johnson, 2015; Pateli & Giaglis, 2005), there is also interesting research that has been published.

Some future research directions are worth mentioning.

There is interesting research to be developed on business models, and BMIs applied to business model portfolios (Sabatier et al., 2010), in multiproduct/multiservice environment. This research direction involves studying integration between different business models managed in a given organization, according to business units or other criteria.

Also, the application of business models and BMI in multinationals, as well as the linkage with the structural configurations of the management of the multinational, i.e. business models at headquarters versus business models at subsidiary levels. This research direction may draw from the international R&D organization and international business theory, as multinationals apply different governance models (ethnocentric, polycentric, networked) (Fastoso & Whitelock, 2010) and business models and BMI may hold specificities according to the governance model.

Furthermore, another interesting question has been raised on the need of cultural adaptation (De Mooij & Hofstede, 2010) of business models (case of Chinese BMs in European settings or vice-versa), which has an immediate impact on what BMI really means in different cultural contexts.

From a methodological perspective, as most studies employ case studies or other types of qualitative analysis, of exploratory nature, there is a clear need of developing and

validating constructs in different settings, with quantitative or mixed-methods studies.

This is linked to the current gap in what concerns primary data collection based on questionnaire-based surveys. Performing such studies would allow assessing the BM adaptation process in different types of industries and countries, as well as identifying the preferred BMI tools and decision-support systems in different settings.

As final note, and perhaps not directly related to future research direction, but more to future development of the field of BMI, we notice that conferences focused exclusively on Business Models are required and there may be space in European funding field to develop projects defining BM practices, BM frequency of change recommendations, as well as BM recommended tools for given industries. There is space for policy makers to intervene top-down, as well as for the firms, consultancy and academia to self-organize bottom up.

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