

The business model and intellectual capital in the value creation of firms

A literature review

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Abstract

Purpose – The purpose of this paper is to analyze business model (BM) and intellectual capital (IC) of a firm with a focus on their common elements. The common bases in the field of strategic management for these two concepts are, among others, resource-based view, knowledge-based view, intellectual capital-based view, dynamic capabilities, and configurational approach. It indicates areas in which these two concepts can benefit from each other, e.g. in classification of components, their configuration, or dynamic approach. This general review examines the following research questions: What are the common concepts for the BM and IC? What are their common components? What does the dynamic approach to IC and BM mean?

Design/methodology/approach – The Web of Science™ Core Collection database was selected for the period 1975-2014 and the *Journal of Intellectual Capital (JIC)* indexed in Scopus® (Elsevier) was incorporated into the analysis for the period it had been indexed by Scopus (1990-2015). These databases were selected because they offer a reliable overview of historical data regarding journals, articles, and citation impact. The key filter criteria were the presence of the phrases “business model” or “intellectual capital” in the article title, abstract, and key words in order to narrow down the selection to the most appropriate results for the research area.

Findings – This paper investigates two concepts from the point of view of their underpinnings in management, definitions, and components, as well as value creation. Analysis of the foundations in management allows the author to present a cohesive model, which depicts a comprehensive approach to analysis of these two concepts. Many common elements have been identified and investigated.

Originality/value – First, it provides an indication of the common underpinnings of the analyzed concepts within the framework of strategic management and proposals for their development toward resource, knowledge, and IC accumulation, combination and heterogeneity-based views. Second, it presents an analysis of the BM and IC components, showing common elements between them. Third, it provides a description and analysis of dynamic view of BM and IC components in a value creation context.

Keywords Value creation, Business model, Intellectual capital, Components

Paper type General review

1. Introduction

The development of the concepts business model (BM) and intellectual capital (IC) started two decades ago and since then a lot of work has been conducted to define these two concepts, as well as their components. However, there are still noticeable differences between standard frameworks and consistent meanings within the range of accepted definitions, and even the components that constitute them (Klang *et al.*, 2014; Martin-de Castro, 2014; Zott *et al.*, 2011).

The primary motivation for writing this paper is based on a striking similarity between the BM, generally associated with strategic management, and the IC popularized by scholars of knowledge management, prompting this in-depth analysis. In previous studies which have highlighted both concepts, some authors have mentioned BM and IC in their



research but only within a particular context, e.g. accounting and reporting (Beattie and Smith, 2013), bank management (Chen *et al.*, 2014), BM change and investment in IC (Cucculelli and Bettinelli, 2015), the direct influence of IC on BM innovations (Roos, 2013) and its development (Namvar and Khalilzadeh, 2013), or the influence of BM on IC (Liang *et al.*, 2013; Namvar and Khalilzadeh, 2013). In all the research mentioned above, the authors usually described the positive effects of changes to BM or IC, solely based on performance.

This paper discusses the role of the BM and IC in the value creation of firms. The study considers the dynamic approach which is usually neglected in the related literature. It analyses the issue through the prism of value creation processes which are interpreted as the interaction of resources and components in value creation. Usually, a unique combination of BM and IC resources impacts on each other to create an opportunity for increased value and higher returns for the firm.

This work aims to analyze the BM and IC of a firm by focusing on common elements such as value creation, resource-based competitive advantage, a dynamic view of how components inter-relate, and their various combinations and configurations. To analyze these elements, it was crucial to identify and present the common theoretical approaches for these two concepts in the field of strategic management. Based on these theoretical approaches, the paper is built on prior studies to determine the interfaces of the BM concept with the traditional concept of IC. Due to this literature review, it was possible to develop a cohesive model which depicts a comprehensive view of the analysis of the BM and IC in value creation.

This review examines the following research questions:

RQ1. What are the common concepts for the BM and IC?

RQ2. What are their common components?

RQ3. What does the dynamic approach to IC and BM in value creation mean?

The paper makes a number of contributions. First of all, it provides a review of theoretical approaches used to analyze the BM and IC. These are, among others, the resource-based view (RBV), the knowledge-based view (KBV), the intellectual capital-based view (ICBV), dynamic capabilities, and the configurational view. Second, it analyses the BM and IC components by focusing on common elements between them. And finally, it provides a description and analysis of the dynamic view of BM and IC components and their combination in the value creation of a firm.

The paper is divided into six sections: Introduction, Methodology approach, BM and IC concept definitions and components, Theoretical approaches used to analyze BM and IC, The dynamic view of BM and IC components and their combination in the value creation of a firm, and Discussion and direction for further research.

2. Methodology approach

An exploratory literature review, which sought to find out what existed in the academic literature regarding theory and empirical evidence and identified research questions, was selected to answer the research questions. The Web of ScienceTM Core Collection database was selected for this analysis. It includes Science Citation Index Expanded, Social Sciences Citation Index and Arts, and Humanities Citation Index for the period 1975-2014. Moreover, the *Journal of Intellectual Capital (JIC)* indexed in Scopus[®] (Elsevier), and considered to be a leading title in the field, was incorporated into the analysis for the period it had been indexed by Scopus (1990-2015). The key filter criteria in the search were the phrases “business model(s)” and “intellectual capital” in the article title. As extant research indicates (e.g. Coombes and Nicholson, 2013; Zott *et al.*, 2011), a multi-stage process of

article selection, taking into account key words and the appearance of phrases of interest in the abstract, is not sufficient and additional analysis is required to exclude articles that treat a given topic in a trivial or marginal way. For this reason, selecting a phrase in the article title leads to a higher probability that the article will deal with the selected topics (e.g. Jasienski, 2009). In the case of the Web of Science database, the initial search revealed 658 results containing “business model(s)” in the title, and 419 results containing “intellectual capital” in the title. The search was limited to management (223) and business (163) areas.

Further refinement of the search criteria involved looking for the following topics in the main body of an article: value creation, competitive advantage, RBV, KBV, ICBV, dynamic capabilities, and configurational approach, as shown in Table I. These topics are associated with the main aims of the paper and this search resulted in a final selection of 28 articles including “business model(s)” in their titles and 26 articles with “intellectual capital” in their titles. Next, a snowball sampling technique (Noy, 2008) was applied which, in this case, meant the inclusion of articles indicated in the references of the first group of papers (from the Web of Science database). The last category “Others” included papers related to the research methods (see Table I).

The Scopus database search was limited to the results for the *JIC* only. The filtering process revealed 302 articles with the phrase “intellectual capital” in the title, and this was narrowed down to 264 articles using the key word “intellectual capital” in the business,

	Web of Science			Only <i>Journal of Intellectual Capital</i> indexed by Scopus		
	Phrases		Snowballing based on topics	Others	Phrase	
Selection criteria	Business model(s)	Intellectual capital			Selection criteria	Intellectual capital
Document type: article	261	151	28		Document type: article	302
Document type: book			3		Scopus categories:	
Web of Science categories:					Business, management, and accounting	264
Management	223	136			Article title, abstract, and keyword:	
Business	173	73			Value creation	32
Topics, key words, or phrases in texts:					Competitive advantage	15
Value creation	23	16	18		Resource-based view	5
Competitive advantage	20	19	24		Knowledge-based view	0
Resource-based view	11	12	20		Intellectual capital-based view	1
Knowledge-based view		7	6		Dynamic capabilities	1
Intellectual capital-based view		3			Configurational approach	0
Dynamic capabilities	6	4	8		Number of documents after filtration	18
Configurational approach		2	4		Total	18
Number of documents included in this study – Web of Science, snowballing results, and <i>JIC</i> indexed by Scopus	28	26	31	3	88	18
Number of documents after filtration						
Total						
Retained for further analysis: 106						

Table I.
Number of documents included in this study – Web of Science, snowballing results, and *JIC* indexed by Scopus

management, and accounting search categories. A clear majority of these articles addressed reporting, disclosure, measuring (measure, measurement), valuation, statement, efficiency, and evaluation of IC. Another 18 articles published in *JIC* were selected for further analysis; these treated IC from the perspectives of value creation, competitive advantage, RBV, KBV, ICBV, and dynamic capabilities. In total, 742 articles were identified from the Web of Science and *JIC*, of which 106 were retained for further analysis as shown in Table I.

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3. BM and IC concept definitions and components

3.1 *BM and IC definitions*

BM and IC have been defined in many ways. For this paper, these two concepts were described through the lens of value creation, components, and resources. A lot of authors (e.g. Aspara *et al.*, 2013; Chesbrough and Rosenbloom, 2002; Johnson *et al.*, 2008; Magretta, 2002; Morris *et al.*, 2005; Teece, 2010; Zott *et al.*, 2011) believe that BM is expressed through the generation of value for customers and in the creation of a model geared toward delivering this value. Johnson *et al.* (2008) define BM as a customer value proposition, a profit formula, and a key resource and process in the context of value creation for the customer and the firm. Moreover, BM is defined as a “firm-specific natural language within which the future value of the intangible assets can be estimated” (Spender *et al.*, 2013, p. 101).

There is a certain imprecision in the definition of whether BM contains IC within itself, or whether it is instead an asset of IC, as “intellectual capital assets, such as a firm’s BM, are hard to identify, plus many of them are not entirely in the firm’s control, for example, the employees’ tacit knowledge” (Spender *et al.*, 2013, p. 102). The assumption that BM is based on a multi-layered IC goes slightly against this view. In turn, Casadesus-Masanell and Ricart (2010) define BM as a direct reflection of the strategy implemented by a firm. They posit that every firm has some BM, but not every firm has a strategy, understood as a plan of action in case of contingencies. However, the authors do not make it clear whether a firm that does not have a strategy may still have a BM which relates to strategy. It should be stressed that IC is also linked to strategy and the results of a firm (Tseng *et al.*, 2013). To recognize a firm as a system of value creation in which tangible and intangible assets are utilized and created, it is important to develop a strategy for linking sources of value creation potential in a firm with the ability to add value through BM.

The objective of a firm’s IC is to create a framework for describing all the resources of the firm and how they interact to create value (Peppard and Rylander, 2001), as is the case in Maria Diez *et al.* (2010). Moreover, these authors confirmed the influence of human and structural capital on value creation, particularly regarding sales growth. In other studies, Liu *et al.* (2009) empirically verified the importance of IC (human, customer, process, and innovation capitals) on the firm’s value measured by the share price, and the value creation measured by the difference between the share price and the book value.

Most often, however, IC is linked with the value creation, competitiveness, and results of the firm (Bontis, 1999; Hsu and Fang, 2009; Kong and Thomson, 2009; Subramaniam and Youndt, 2005; Teece *et al.*, 1997). IC also includes the stocks and flows of intangible resources and capabilities, which facilitate the growth of the basic business processes of the firm, and thus its competitive advantage as well (Martin-de Castro, 2014). It contains elements such as capabilities, culture, strategy, processes, intellectual property (IP), and relationship networks, which create value or a competitive advantage for a firm (Hsu and Fang, 2009). This view fully supports the concept of IC as a network relational process (Arenas and Lavanderos, 2008), in which network activity and the network structure constitute the IC and localize it within the exchange and configuration of knowledge.

Some of the most interesting research regarding the use of IC and BMs in creating a strategic network is provided by Peng *et al.* (2011), especially since the network approach is rarely used in IC and BM analysis. One exception is Kasztler and Leitner (2009) who analyze

the links between IC elements using social network analysis and the sensitivity model in the context of its management and control. The network approach is presented slightly differently in the work of Lindgren *et al.* (2010), in which the authors emphasize the significance of network-level BMs and innovations arising from a network of relationships and connections. However, the authors do not use any network indicators (e.g. closeness centrality), as is the case in Kasztler and Leitner (2009).

3.2 IC components

To understand the nature of BM and IC, it is essential to study them at the different levels – individual, organizational, and inter-organizational – on which the identification of their main components depends. At the individual level (human capital), the elements of paramount importance are as follows: the knowledge which an employee possesses, attitude, behavior, experience, and skills and capabilities that are developed during training (Bontis, 1999; Edvinsson and Malone, 1997). At the organizational level, IC takes the form of structural capital (Chang *et al.*, 2008; Hormiga *et al.*, 2010; Hsu and Fang, 2009; Sveiby, 1997). Among others, structural capital covers infrastructure (including IT systems, management processes), IP, business processes, technological capital, concepts, models, computer and architecture systems, routines, procedures, organizational structure, strategies, the structure of the business, operational processes, specific methods, business development plans, and corporate culture. The role of structural capital is to capture (store or codify) human capital in the form of explicit knowledge that is documented in designs, routines, and procedures. The inter-organizational level is mainly related to such forms of IC as social capital (Nahapiet and Ghoshal, 1998; Reiche *et al.*, 2009), relational capital (Hormiga *et al.*, 2010), customer capital (Edvinsson and Malone, 1997), or market assets (Brooking, 1997), which include product or service brands, and corporate reputation and image. Some authors (Leliaert *et al.*, 2003) distinguish customer capital from a strategic alliance, treating it as an additional IC component. As shown in the above-mentioned IC categories, a strategic partnership can be part of customer or relational capital.

The three-pronged classification of IC into human, structural, and relational capital has been used in many studies (e.g. Demartini and Paoloni, 2013; Jardon and Susana Martos, 2012; Keong Choong, 2008; Molodchik *et al.*, 2012), including those concerning universities (Paloma Sánchez *et al.*, 2009). In Paloma Sánchez *et al.* (2009), structural capital appears as organizational capital. Keong Choong (2008) has added IP to this classification. IP may be found especially in Brooking (1997), while Sonnier (2008) discusses IP and supplier capital. Other classifications are also available in prior research, such as the division of IC into human, customer, process, and innovation capitals (Liang *et al.*, 2013; Liu *et al.*, 2009).

3.3 BM components

BM is often defined in the context of the conceptualization of the relationships between the firm and its stakeholders, and particularly clients (Baden-Fuller and Morgan, 2010). It is significant, as social/relational capital also plays an essential role in value creation and concerns customers and other firm's external partners in the IC concept (Hsu and Fang, 2009; Subramaniam and Youndt, 2005). The definition of BM, presented by Zott and Amit (2008), from the perspective of partner and stakeholder relations remains dependent upon the relational component of IC. In a similar way in Magretta's (2002) work, BM focuses on cooperation, partnership, joint value creation, value propositions, and the role of the customer, recognizing the inter-dependability of actions performed as the essence of BM (Zott and Amit, 2010). BM outlines the details of the value proposition to the firm's stakeholders and the activity system used to create and deliver value to customers. This interdependency in the context of IC is visible in Jardon and Susana Martos (2012),

who treat it a bit iteratively, claiming that human capital creates structural capital, and this, in turn, creates relational capital at the level of the environment.

There exists no unified definition with regard to the classification and components of BM and IC. To understand how value is created for the customer and the firm, an essential issue is the identification of components and the understanding of the connections between them. As rightly noted by Zott *et al.* (2011), there is a lack of publications analyzing the relationship between BM components and other constructs. The decomposition of the BM does, however, admit the existence of interdependency between these components, but says little about the nature of these relationships (Morris *et al.*, 2005). Based on the analyzed literature, it is possible to distinguish four related dimensions of the BM and IC components and to assign attributes to them (see Table II), which can be further divided into four related dimensions: financial, value related, structural, and relational. The structural and relational dimensions are also the dimensions of IC.

The value dimension with its many variations is not an element of the IC model, but its outcome. Here, value creation occurs as a result of the interaction between the three IC components: human, structural, and relational (Hermans and Kauranen, 2005). Meanwhile, the financial dimension is more often included in the analysis of IC, particularly where attempts are made to depict the full outline of the firm's value, its resource base, and the means by which asset monetization occurs. More than just a result of IC, the financial dimension can also contribute to IC, or limit its development in the case of a lack of funds. IC is not only a resource but also an expense and must compete against other kinds of investments within the firm, as part of organizational processes such as financial planning or budgeting (Murthy and Mouritsen, 2011).

The structural dimension constitutes organizational and informational infrastructure in its broadest meaning. Within this dimension, the following components of BM and IC can be

Dimensions	(F _n) Financial	(V) Value	(S) Structural	(R) Relational
Components (attributes)	Revenue mechanism (Chesbrough and Schwartz, 2007) Revenue streams (Demil and Lecocq, 2010) Profit potential (Chesbrough and Rosenbloom, 2002) Profit formula (Johnson <i>et al.</i> , 2008) Economic logic (Magretta, 2002) Monetization (Baden-Fuller and Haefliger, 2013) Cost structure (Chesbrough and Rosenbloom, 2002) Revenue costs (Demil and Lecocq, 2010)	Value proposition (Chesbrough and Rosenbloom, 2002; Chesbrough and Schwartz, 2007; Demil and Lecocq, 2010; Johnson <i>et al.</i> , 2008) Value to customer (Magretta, 2002) Value chain (Demil and Lecocq, 2010; Chesbrough and Schwartz, 2007; Chesbrough and Rosenbloom, 2002) Value delivery and linkages (Baden-Fuller and Haefliger, 2013) Marketing offering (Mason and Spring, 2011)	Competitive strategy (Chesbrough and Rosenbloom, 2002; Chesbrough and Schwartz, 2007; Martinez-Torres, 2006) Technology (Edvinsson and Malone, 1997; Johnson <i>et al.</i> , 2008; Mason and Spring, 2011) Key processes (Johnson <i>et al.</i> , 2008; Hsu and Fang, 2009; Martinez-Torres, 2006) Key resources, e.g. brand, information (Johnson <i>et al.</i> , 2008)	Customer definition (Bontis, 2001; Edvinsson and Malone, 1997; Magretta, 2002; Wall, 2005) Customer engagement (Baden-Fuller and Haefliger, 2013) Value network (Chesbrough and Rosenbloom, 2002; Chesbrough and Schwartz, 2007; Demil and Lecocq, 2010; Magretta, 2002) Network architecture (Mason and Spring, 2011) Market segments (Chesbrough and Rosenbloom, 2002) Target market (Chesbrough and Schwartz, 2007) Distribution channels (Brooking, 1996; Johnson <i>et al.</i> , 2008; Kim <i>et al.</i> , 2011) Partnership (Brooking, 1996; Johnson <i>et al.</i> , 2008) Alliances (Brooking, 1996; Johnson <i>et al.</i> , 2008)

Table II.
Business model and
intellectual capital
components

distinguished: strategies, technology, and organizational processes. The strongest relationship between BM and IC is formed by the relational dimension and its attributes. The BM components that are most connected with IC were identified by Mason and Leek (2008) and included network structure, inter-firm routines, knowledge forms, and their integration in the context of a problem-solving approach. The authors emphasize that the sources of information and knowledge within the organization’s structure and network have an impact on the organization’s results. The direct relationship between IC and BM components, especially the impact of structural capital on various eBMs, can be seen in the empirical studies of Namvar and Khalilzadeh (2013). However, the authors have mistakenly included customer capital in the structural capital, whereas customer capital is and should be part of relational capital (a term which is used interchangeably with customer capital) and stands as a distinct IC component.

4. Theoretical approaches used to analyze BM and IC

4.1 RBV

The main areas of interest for strategists and the strategic management discipline include the study of how value is created for a firm and what its competitive advantage is. These areas are associated mainly with RBV – with works such as Amit and Schoemaker (1993), Barney (1991), Peteraf (1993), Wernerfelt (1984) – and its extensions of KBV and ICBV which emphasize intangible resources based on knowledge and its use (Grant, 1996; Kogut and Zander, 1992; Reed *et al.*, 2006; Spender and Grant, 1996). Since many definitions of BM and IC refer to resources, competitive advantage, and, finally, value creation, the natural theoretical context for these definitions would be those three approaches (i.e. RBV, KBV, and ICBV) which state that an enterprise needs resources to create value for the client and the firm.

Resources occupy a central position in the RBV, but their significance is often considered a priori or is weakened by “all inclusive” definitions in which it is difficult to distinguish resources from capabilities (Priem and Butler, 2001). Authors define resources in different ways. As an example, in Peppard and Rylander (2001, p. 512), they are “structures, processes, people, culture, knowledge, and relationships.” For Barney (1991, p. 101), they are “assets, capabilities, organizational processes, firm attributes, information, knowledge, etc.” Resources are also socially and organizationally established routines which determine how effectively firms physically transform input into results (Winter and Szulanski, 2001). As Kraaijenbrink *et al.* (2010) suggest, resources should be classified in the context of their contribution to a sustained competitive advantage. A division of resources into tangible and intangible, as well as static and dynamic (see Figure 1), is suggested in the section on components and combination. It is worth noting here that the components of BM and IC take the form of both resources and capabilities.

A key question in the RBV is how firms develop strategic resources and the quality of resources invested in the value creation process. It does not explain, however, a framework for the involved processes or how the resulting value is created. The relationship between a firm’s resources and value is assumed, but not explained (Peppard and Rylander, 2001; Reed *et al.*, 2006). In the RBV, a firm’s resources, particularly intangible ones, contribute to

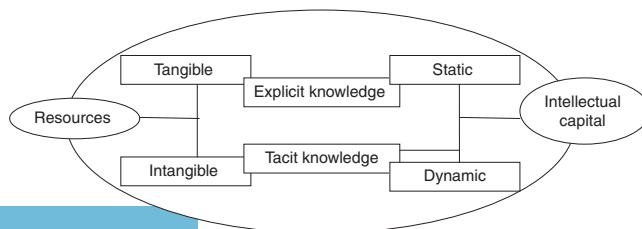


Figure 1.
Resource classification

the achievement and maintenance of productivity when they are connected or integrated (Barney, 1991). RBV combines BMs (Garnsey *et al.*, 2008) and IC with resources and their allocation. The BM itself may play a key role in visualizing the capability configurations of a firm, which are the cohesive combination of resources and capabilities included within the organization's infrastructure that generate value.

An example of the use of RBV to present BM is given in Hedman and Kalling (2003), who analyze the model of the chosen firm from the perspective of resources, such as design skills, supplier relations, sourcing networks, and cultural factors combined with leadership and strong commitment. At the same time, these resources describe IC, where design skills are an element of human capital or, when codified, structural capital (Edvinsson and Malone, 1997). Supplier relations and sourcing networks are social capital (Nahapiet and Ghoshal, 1998; Reiche *et al.*, 2009) or relational capital (Hormiga *et al.*, 2010) which goes beyond the internal aspects of the organization that dominates RBV (Roos, 1998), while cultural factors are an element of structural capital (Martínez-Torres, 2006). However, the complexity and comprehensiveness of BM and IC cannot be explained by the resource approach alone, as resources do not carry value within themselves. Value creation is possible only as a result of their use or transaction (DaSilva and Trkman, 2014).

4.2 KBV

The RBV is augmented by the KBV, which emphasizes that critical resources and competencies are those characterized by knowledge, and knowledge processes play a key role in improving a firm's results (Amit and Schoemaker, 1993; Grant, 1996; Spender and Grant, 1996). According to the RBV, knowledge assets mean strategic organizational resources that differentiate the firm in a specific environment, delivering a sustained competitive advantage. This approach considers knowledge to be the most valuable resource and production factor. The difference between firms' results arises from differentiated knowledge-based resources and capabilities in use, and the development of this knowledge (Kogut and Zander, 1992; Penrose, 1995). In this concept, firms are social objects that store internal and external knowledge, which in turn create the foundations for the survival and success of the firm (Martin-de Castro, 2014).

Perceived in this way knowledge constitutes the internal and static resources of a firm (primarily in a codified form, known as explicit knowledge). Going slightly against the position of Yates-Mercer and Bawden (2002), it is assumed that knowledge, particularly explicit knowledge, takes a static form and is formalized in the form of designs, manuals, documents, and procedures. The dynamic aspect of explicit knowledge occurs only when knowledge accumulated in a passive form (stocks of knowledge) becomes value for the firm and customer, as a result of transformation, change, and application. Explicit knowledge can be controlled and utilized, and can be the subject of trade, unlike tacit knowledge (non-codified, or difficult to codify) which can be a source of sustained competitive advantage to a much greater degree.

The KBV assumes that tacit and contextual knowledge facilitates a higher level of productivity due to its inimitability. Subramaniam and Venkatraman (2001) empirically demonstrated how tacit knowledge contributed to the development of organizational capabilities that increased a firm's results. Contextual knowledge resources, built into processes, procedures, and the social context of a firm, are particularly difficult to replicate and are important for a competitive advantage. According to this concept, the value is created through the transfer of knowledge, support for knowledge sharing, and its reuse (Kong and Thomson, 2009). As firms' BM and IC are based on knowledge, KBV provides strong justification for their roles in increasing organizational productivity (Youndt *et al.*, 2004).

In KBV, knowledge is postulated to be essential for value creation, though it does not fully explain in what way knowledge can contribute to the creation of value and

improvement of a firm's results. It is necessary to analyze it from two complementary perspectives, static and dynamic, for both tangible and intangible resources (IC) and knowledge. A static view is a sort of picture of the status quo of BM and is thus a reflection of the state of resources, including knowledge and IC at a given moment, and their contribution to value creation. A dynamic view of BM and IC should be based on the transfer and network of connections between components, taking time into account, in order to reflect the change in the value of components as well as the value associated with the customer and the firm.

Few qualitative studies are longitudinal in nature and take into account the long-term impact of IC on value creation and destruction in the way that Giuliani (2015) does. A similarly unique approach in the field is also seen in Chiucchi and Dumay (2015), who analyze changes to IC over time and their impact on the firm using the actor-network theory and relationships between human and non-human actors.

Intentional selection of the components of BM and IC is the first important source of their dynamics. Aspects of a dynamic approach to resources and competitive advantage are not emphasized in the considerations of RBV and KBV but can be found in ICBV, in particular in Penrose (1995).

4.3 ICBV

KBV is supplemented by ICBV (Martin-de-Castro *et al.*, 2011; Reed *et al.*, 2006), in which IC is divided into the following components: human capital, organizational (structural) capital, and social (relational) capital, which are complementary resources. Both are based on the clarification of hidden, knowledge-based dynamics, which form the basis of a firm's value and competitive advantage. Both also form the foundations of RBV although this differs in its emphasis.

Youndt *et al.* (2004) point out that KBV is an evaluation of the effectiveness of using management tools and mechanisms of knowledge generation, i.e. information systems and information management systems. Unlike KBV, ICBV focuses on stock and the flow of knowledge capital established in the firm and is expressed in direct reference to the financial results. IC emphasizes resources in action to a much greater degree than RBV, through the inter-relationships between different IC elements (human, structural, and relational) and IC resources which transform into others (Cuganesan, 2005). Moreover, a firm can actively cultivate value creation through the accumulation, allocation, integration, and application of their resources (Peppard and Rylander, 2001).

The relationship between IC components and the firm's financial results, competitive advantage, and innovativeness are the main topics of research geared toward empirical validation of the strategic value of IC (Hsu and Wang, 2012; Subramaniam and Youndt, 2005). The study by Reed *et al.* (2006) is an answer to the weaknesses of RBV. These weaknesses include an inability to indicate which resources one should invest in to achieve an advantage, a lack of a clear definition of competitive advantage in the framework of this approach, and the tautology arising from the fact that resources are defined in relation to the results achieved through them.

The RBV turned out to be ambiguous as to its proper domain, as well as being too general. Another weakness indicated is equifinality, meaning that many favorable configurations of resources are possible. ICBV, unlike RBV, emphasizes the external aspects of the firm, going beyond its borders, and in this view, social/relational capital and dynamic capabilities should play the most important role. The components of IC can be further described in the context of BM.

4.4 Dynamic capabilities and competitive advantage in the BM and IC concepts

Knowledge alone cannot be isolated from tangible resources and their use. This means that the inclusion of the dynamic capabilities in KBV and ICBV allows for more

connections to be made between BM and IC. The dynamic capabilities' perspective aims to find sources of the firm's success. Focusing on difficult-to-replicate capabilities allows the firm to change the configuration of its resources, formation, and adaptation to its surroundings (Eisenhardt and Martin, 2000; Teece *et al.*, 1997). Therefore, the selection and construction of BM will be based on the use and reconfiguration of capabilities needed by the business if it wants to keep up with market change. The key elements of dynamic capabilities are organizational and managerial processes focused on finding and retaining business, technological and market opportunities, the reconfiguration of assets, and organizational structures at the moment of the firm's growth and market changes. It has been argued that the application of different capabilities creates value for the customer, and intentional changes of capabilities are the essence of dynamic capabilities (Achtenhagen *et al.*, 2013). The strategy itself includes devising dynamic capabilities that can respond to contingencies through the organization's BM, which is limited by the firm's dynamic capabilities (DaSilva and Trkman, 2014).

The literature on dynamic capabilities (e.g. Mason and Leek, 2008) indicates that the external environment impacts a firm's capacity to learn and, in a highly unpredictable environment, firms must expand and configure new and existing capabilities. In turn, according to Barreto (2010, p. 271), "a dynamic capability is the firm's potential to systematically solve problems, formed by its propensity to sense opportunities and threats, to make timely and market-oriented decisions, and to change its resource base."

Furthermore, dynamic capabilities are the creation of difficult-to-imitate combinations of resources as well as the coordination of inter-organizational relationships that can provide a competitive advantage (Griffith and Harvey, 2001). Dynamic capabilities defined in this way stress the role of learning, resources, and external relations that can be found in the analysis of relational capital considered to be a component of IC. With the above in mind, resources and dynamic capabilities are closely tied to a firm's results and its competitive advantage, thus justifying their analysis within the framework of BM and IC, as has been argued below.

BM and IC are also studied in the context of competitive advantage (e.g. Reed *et al.*, 2006). BM may be a potential source of competitive advantage (Zott *et al.*, 2011) when used as an instrument to explain the firm's results or to establish unique resources and activities they are used for (Chesbrough, 2010). If BM generates profit, it is because the firm has developed activities and accumulated resources more effectively than its rivals. The firm's assets or resource base and activity profile are integrally tied to its BM (Gambardella and McGahan, 2010). The firm's internal resources are the main source of value creation. Consequently, control of critical assets and capabilities is essential to maintain a competitive advantage (Sanchez and Ricart, 2010).

If capabilities form the basis of BM, then advantage can be built around one or more capabilities. New BMs can increase competitive advantage by introducing better market strategies for products. Together, the product market strategy and the structure included in the BM can increase competitive advantage independently or jointly (Zott and Amit, 2008). An innovative BM, and its architecture (the means of organizing and configuring components) in particular, can be in itself a means of establishing a competitive advantage. The BM is sufficiently differentiated and not easily replicated by current and new market participants, thereby generating lower costs or increased value to customers (Teece, 2010). The more BM is based on intangible IC, the more sustained the competitive advantage will be.

Research by Kamukama *et al.* (2011) confirms the intermediary influence of competitive advantage on the relationship between IC and financial results in the financial sector (the study concerned institutions providing microfinancing to firms in Uganda). The direct relationship between IC (as a permanent source of wealth creation) and financial results is confirmed by a study of 81 multinational firms in the USA (Riahi-Belkaoui, 2003), as well as in the healthcare industry (Cheng *et al.*, 2010).

4.5 A configurational approach

The competitive advantage of a firm and its results rarely stem from a single cause, and this cause does not operate in isolation from the rest. The configurational approach (Fiss, 2007; Meyer *et al.*, 1993) is used, then, to determine the open, multi-layered conceptual constellation of various properties which often appear together. Hence this approach in strategic management studies (Miller, 1996) is particularly justified. Both BM and IC are multi-faceted constructions, embodying the mechanisms of creating competitive advantage resulting from differentiated configurations of resources and their use in the firm.

This approach improves upon the cause-and-effect relationships assumed in RBV and ICBV. It allows for equifinality, meaning that certain results can be explained through more than one configuration with the same functional effect (Gresov and Drazin, 1997). Competitiveness, or the creation of value, can be explained through a set of causal factors (components of BM and IC) which do not act in isolation from one another. Hence the configuration perspective may help determine in what way a model of BM and IC impacts a firm's results as a whole, taking into account synergistic relationships and their interdependencies.

5. The dynamic view of BM and IC components and their combination in the value creation of a firm

A dynamic approach to firms' growth, according to Penrose (1995), is based on the identification of its key components, which make it possible to explain the firms' growth process by theorizing about the dynamics between these components (Demil and Lecocq, 2010). In this view, components are primarily physical and human resources with incorporated services. Services are a function of the way they are used, in combination with various types or sizes of other resources. They depend upon management's capacity to extract value from their use and create innovative combinations to a greater or lesser degree (Demil and Lecocq, 2010). A permanent increase in knowledge about the efficient use of resources, or new uses, can lead to the development of new value propositions and new BMs. The foundations of BMs are made up by portfolios of different resources (tangible and intangible), while the domain of the firm is their unique combination of value creation.

IC and BM create value only when synergy and combination with other resources occurs. This is perceived as a value driver based on the causal relationship between resources and value creation, which plays a key role from a strategic and managerial perspective (Edvinsson, 1997; Edvinsson and Malone, 1997; Wiig, 1997). The firm's ability to co-create and transfer knowledge in a network seems to be central to the creation and continuous growth of a dynamic BM. The concepts of learning and knowledge transfer have not been incorporated in the description of a dynamic BM, understood as inter-firm knowledge transfer, such as in Mason and Leek (2008).

Introducing new components to BM may result in a change in dynamics between existing components. The significance of resource integration is similar in Teece *et al.* (1997). It influences the complexity of competitive advantage imitation by competitors, based on a combination of valuable, firm-specific resources. Such combinations normally appear in an organizational process which is causally inconsistent, path dependent, and socially complex. BMs represent specific combinations of resources which create value for both the customer and the firm through transactions (DaSilva and Trkman, 2014). In the case of IC, the transaction issue complicates resource intangibility. Only a part of IC (structural capital) can be the object of the transaction (e.g. IP, such as a brand, licenses, know-how, or patents), while the value of the firm may be generated through the combination and use of IC resources (Nahapiet and Ghoshal, 1998; Peppard and Rylander, 2001).

These combinations show how BM and IC can deliver a set of resources as key sources of competitive advantage. Here, human capital, despite the fact that it is more dynamic, is not a main asset in comparison with structural capital, which can be retained. The challenge is to

merge the development process of BM and IC with value creation, collecting, registering, and making knowledge available. According to Tseng and Goo (2005), value creation is based on three perspectives: RBV, financial, and IC. All of them stimulate the dynamics of value creation based on the transformation of resources into results. Both BM and IC and their components make it possible to visualize value creation, which is mainly driven by knowledge and other intangible assets in today's economy. The way in which value is created is determined by such factors as the firm's core logic, a system of assumptions, the cognitive environment influencing managerial decisions, and competencies which authorize value creation from resources. A firm's results depend on the effectiveness of BM in converting available resources into value (Carayannis *et al.*, 2014; Nair *et al.*, 2012).

6. Discussion and direction for further research

In the section devoted to an overview of the BM and IC literature, the aim was to present these two concepts based on their underpinnings in management, definitions, and component combinations, as well as on value creation. The recognition of the foundations in strategic management gives a possibility to present a cohesive model (see Figure 2), which illustrates a comprehensive approach to the analysis of these two concepts.

In Figure 2, both concepts are equal in terms of value creation – both treat value creation (for a firm or customer) as an overarching goal which may result in the attainment of a competitive advantage. It was important to show those resources (mainly intangible) that determine the shape of BM and form its building blocks. Three approaches are RBV, KBV, and ICBV. They stress, to a greater or lesser degree, the internal and external aspects of the firm's functioning, use of resources (tangible and intangible), knowledge (explicit and tacit), capabilities (dynamic), and the context of value creation for the firm and customer, as well as competitive advantage.

Particularly worthy of attention is the relational view of the IC component and creation of relational rent, which present valuable market opportunities for partner firms and allow them to benefit from such an alliance. Such an objective may be achieved by a firm, acting in agreement with other market entities, to have better access to information than their competitors. Moreover, it makes use of inter-organizational synergy and limits transaction costs or competitors' market access.

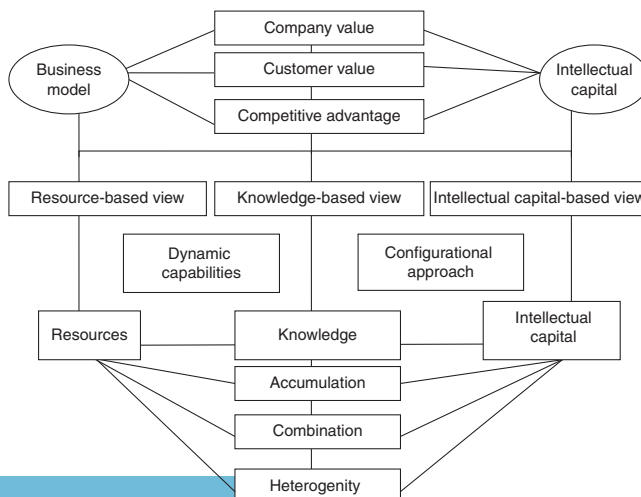


Figure 2.
The business model
and intellectual
capital – a
comprehensive view

RBV demonstrates the need to apply resource isolation mechanisms and market distortions in order to make sources of value difficult for competitors to obtain. The development of RBV up to this point, including KBV, seems to have reached its limit. The inclusion of ICBV provides a foundation for analyzing a BM which goes beyond the borders of a given firm, considering the impact and influences of the external environment on the creation, capture, and assessment of value.

The description of BM and IC from the perspective of components justifies the inclusion of the configurational approach. This approach combines assumptions of equifinality, indicating the impact of unique and complex configurations of connected outcomes on the maximization of results and on identifying optimal configurations.

To fully grasp the complexity of these approaches (views), it is necessary to develop them in the direction of accumulation, combination, and heterogeneity of resources, knowledge, and IC, and to understand the mechanisms of their activity. The accumulation of resources by firms and their employees is not an object of consideration within RBV. All the more, reason that understanding the process by which a business person and their employees (in a network of connections with external actors) gain resources becomes essential for the RBV (Eyring *et al.*, 2011).

The accumulation of resources in the context of BM has been discussed by Demil and Lecocq (2010) and Nair *et al.* (2012). Demil and Lecocq (2010) view this accumulation as the collection of accumulated (acquired) resources and means of their expression through organizational management, which may present new production opportunities and introduce new products and services to the market. Meanwhile, Nair *et al.* (2012), introduce the interesting concept of knowledge brokerage. This relies on the effective accumulation of external resources in domains of uniqueness, networks, protection, competencies, assets, learning procedures, capabilities, activities/processes, and culture – and their transformation into unique BMs. They point to the acquisition of knowledge and ideas from the firm's inter-industry environment and their utilization. As the authors correctly note, the greater the exposure of BM to resources and knowledge from different fields, the greater the chance of acquiring ideas and achieving better BM results. The accumulation of resources, knowledge, and IC is a prerequisite to their combination, as a further element of the comprehensive model. An essential position is occupied here by the heuristic approach to the creation of unique combinations, which are created through existing resources, knowledge, and IC. New breakthroughs may be merely their combination (configuration), resulting in the creation of unique value as part of a defined BM or IC, competitive advantage, or results.

The heterogeneity of BM, IC, and created value depends on how differentiated and unique this combination is. Firm heterogeneity, operationalized through variations in profitability and resulting from the heterogeneity of resources and their mobility, was discussed by Rumelt (1991), who emphasized the heterogeneity of created value, which is the result of a unique combination of resources, knowledge, and IC.

This paper has focused primarily on those definitions of BM which emphasize value creation (essentially for the customer), resources, and competitive advantage, but has also looked at external relationships, connections, and co-creation of value with the firm's stakeholders. The analysis of these views allowed making a link between BM with IC, particularly with its relational capital. An initial review of the components of BM and IC confirmed that both BM and IC are based on similar components (if not entirely, then in parts) corresponding to their structural and relational dimensions. The dynamics of BM and IC, as well as value creation, occur because of the unique combination of their components. However, the inclusion of the time factor and changes to BM and IC remains an open issue for discussion, in particular when the problem of BM and IC operationalization is considered. The operationalization and measurement of BM continues to be an open question.

Researchers do not seem to pay specific attention to the measurement of the indicators and efficiency of BM (e.g. Balboni and Bortoluzzi, 2015; Freiling, 2015; Goyal *et al.*, 2014; Günzel-Jensen and Holm, 2015; Harima and Vemuri, 2015; Jokela and Elo, 2015; Müller and Vorbach, 2015; Straker and Wrigley, 2015). We still lack papers devoted strictly to BM evaluation and measurement for management and control. The ability to measure key components for value creation would allow the measuring system to be simplified and make it more understandable for a firm's employees. In this way, managers could focus their efforts on measuring and monitoring those areas of BM components that exert the biggest influence on value creation, thus increasing the effectiveness of a BM. A deeper analysis of measurement methods and IC valuation would enable the identification of relevant components, as well as quantitative and qualitative indicators for measuring and evaluating BMs adopted by a firm.

A separate issue is the fact that methods of measuring and operationalizing IC are mainly directed at capturing the status quo of the firm (intangible resources). Similarly, in the case of BMs, only their components are presented, without provoking any discussion that would allow deeper interpretations of both the dynamics of the changes they undergo, or the ties and relationships between them. The dynamic presentation of IC refers to both external acquisition and own generation of resources within the firm, maintaining or developing existing values, and measuring and monitoring resources in real time. Such resources constitute a potential for value creation. Value is created when resources are used; it is wasted when they are not used. By analogy, the dynamic approach to measuring BM and its elements should consider the analysis of changes, processes, and resource flows, as the potential value may be created or wasted there. To achieve this goal, instruments of organizational network analysis are of highest importance.

It remains a challenge to measure and manage the dynamics of (intangible) resources, to examine how these resources are reciprocally related and how a change in one resource causes variations in another resource, leading to changes in the entire BM of a firm. One interesting area of research would be an attempt to assess the value of the BM itself, rather than the firm's value. This is an even more daunting task, as firms may have BMs with completely different values. BM evaluation may improve, and significantly influence, the assessment of the firm's value.

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