

# Business Model Innovation: An Integrative Conceptual Framework

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## Abstract

**Purpose:** The point of departure of this exploratory study is the gap between the increasing importance of business model innovation (BMI) in science and management and the limited conceptual assistance available. Therefore, the study identifies and explores scattered BMI insights and deduces them into an integrative framework to enhance our understanding about this phenomenon and to present a helpful guidance for researchers and practitioners.

**Design/Methodology/Approach:** The study identifies BMI insights through a literature-based investigation and consolidates them into an integrative BMI framework that presents the key elements and dimensions of BMI as well as their presumed relationships.

**Findings:** The study enhances our understanding about the key elements and dimensions of BMI, presents further conceptual insights into the BMI phenomenon, supplies implications for science and management, and may serve as a helpful guidance for future research.

**Practical Implications:** The presented framework provides managers with a tool to identify critical BMI issues and can serve as a conceptual BMI guideline.

**Research limitations:** Given the vast amount of academic journals, it is unlikely that every applicable scientific publication is included in the analysis. The illustrative examples are descriptive in nature, and thus do not provide empirical validity. Several implications for future research are provided.

**Originality/Value:** The study's main contribution lies in the unifying approach of the dispersed BMI knowledge. Since our understanding of BMI is still limited, this study should provide the necessary insights and conceptual assistance to further develop the concept and guide its practical application.

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Keywords: Business model innovation; framework; elements; factors; conceptual study

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## Introduction

During the past decade, research has produced appealing evidence that links successful business model innovation (BMI) with value creation (Giesen *et al.*, 2007; Johnson *et al.*, 2008; Sinfield *et al.*, 2012). Building upon these insights, BMI has—next to acquisition and market expansion, service development, and product development—emerged as a forth path to growth and value creation (Shelton, 2009; Sinfield *et al.*, 2012; Wang *et al.*, 2015). In addition, BMI is seen as a powerful management tool that supports companies in facing today's intensified global competition and dynamic market conditions (Johnson *et al.*, 2008). Consequently, BMI has “become increasingly important both in academic literature and in practice given the increasing number of opportunities for business model configurations enabled by technological progress, new customer preferences, and deregulation” (Casadesus-Masanell and Zhu, 2013, p. 464).

Against this background, scientific research should provide the necessary insights and conceptual assistance to further develop the concept and guide its practical application (Wirtz *et al.*, 2016b). However, our understanding of BMI is still limited (Bucherer *et al.*, 2012; Bocken *et al.*, 2014; Lambert, 2015) and available concepts do not adequately support management in innovating their company's business models (Frankenberger *et al.*, 2013; Taran *et al.*, 2016). From a research perspective, BMI is seen as a fuzzy, slippery construct (Fielt, 2013; Spieth *et al.*, 2014; Taran *et al.*, 2016) that “cannot build on an established definition and well-structured literature base” (Schneider and Spieth, 2013, p. 1). Although there have been massive efforts in the recent past to develop new insights and increase the field's understanding, scientific knowledge is largely present in a heterogeneous, siloed structure (Zott *et al.*, 2011). Moreover, “a sound theoretical foundation is still missing” (Carayannis *et al.*, 2015, p. 86).

Following the arguments of Boons and Lüdeke-Freund (2013), Bocken *et al.* (2014), Massa and Tucci (2014), and Wirtz *et al.* (2016a) scientific research should therefore support a normative process of creating a common understanding and a common language of important BMI concepts since this would help to “accelerate the development of sustainable business models in research and practice” (Bocken *et al.*, 2015, p.

42). Given the fact that there is comprehensive knowledge available (cf. Zott *et al.*, 2011; Massa and Tucci, 2014), which is, however, dispersed across various scientific fields (Zott *et al.*, 2011; Schneider and Spieth, 2013; Carayannis *et al.*, 2015), this study tries to contribute to academic and practical knowledge creation by conducting a literature-based investigation. In doing so, it brings together scattered insights of the BMI framework and consolidates them into an integrative concept that incorporates the key elements and dimensions of BMI. Furthermore, we use Google as an illustrative example of a company that looks back at nearly two decades of successful BMI (Goggin, 2012; Steiber and Alänge, 2013; Wirtz, 2016) to illustrate the different aspects of the integrative concept with practical examples.

Summarizing, the goal of this investigation is to develop a BMI framework that presents unifying insights of available BMI frameworks and explains key factors, elements, dimensions, and the presumed relationships among them (cf. Miles and Huberman, 1994). This way, the integrative BMI framework supports science and management since researchers and practitioners can draw conceptual information and insights about BMI from a synthesis of existing knowledge that is based on a structured analysis of the literature. By illustrating the key components of BMI in a clear and comprehensive manner, the integrative BMI framework should be especially useful to managers in designing and implementing BMI (cf. Taran *et al.*, 2016). For this purpose, the study continues as follows: In the upcoming section, we explain the approach of analyzing the literature and review different BMI frameworks to present an integrative account. In the next section, we integrate the insights drawn from the identified BMI frameworks. The study concludes with the subsequent discussion and conclusion section, outlining its implications for research and practice.

## Identifying existing BMI frameworks in the literature

To identify a relevant set of BMI frameworks, we conducted a title and abstract search in EBSCOhost using three leading academic databases (Academic Search Complete, Business Source Complete, and EconLit with Full Text). This database approach seems especially

reasonable since the BMI “literature is developing largely in silos” (Zott et al., 2011, p. 1019). In a first step, we searched for publications that deal with BMI to establish a meaningful basis of BMI literature (key words: “business model innovation”, “business model evolution”, “business model development”, “business model dynamics”, and “business model reinvention”). This led to a total of 219 search results.

After sorting out the studies that did not match the BMI context, 179 articles remained in the set that formed the starting point for this investigation. Compared to the number of studies in recent BMI literature reviews (cf. Boons and Lüdeke-Freund, 2013; Schneider and Spieth, 2013; Spieth et al., 2014; Wirtz et al., 2016a), we believe this represents an adequate initial set of articles. In the next step, we scrutinized these 179 articles for BMI frameworks and checked their lists of references for further relevant studies that may not have come up in the database query. Finally, we could identify six BMI frameworks, which are outlined in the following.

### Existing BMI frameworks

The first identified BMI framework was elaborated by Malhotra (2000), who presents “a framework for developing organizational knowledge management systems for business model innovation” (Malhotra, 2000, p. 6). In this study, the author proposes an information-processing model and sense-making model of knowledge management to facilitate BMI in order to achieve sustainable competitive advantage in the increasingly dynamic and discontinuous business environment.

Two years later, Deloitte Consulting and Deloitte & Touche publish the results of their competitive strategy study on business model innovation, in which they present a process-oriented BMI framework (cf. Deloitte, 2002) that puts the spotlight on three innovation dimensions (who, what, and how). It describes a systematic approach for implementing and assessing innovation in businesses and focuses on the context of BMI in terms of the external and internal factors and capabilities to be exploited. Moreover, it introduces the concept of sustainability to the BMI setting, emphasizing the innovated business model’s inimitability over time. On the whole, their BMI framework has a strong practical character, seeking to support companies in innovating their business models (Deloitte, 2002).

Building on this approach, Mahadevan (2004) works out the aforementioned framework in more detail by clearly visualizing key BMI factors. The author defines particular core elements, namely who to serve (target customers), what to offer (value propositions), and how to operate (value delivery system), as well as external factors (technology, changing customer needs, firm level issues, regulatory & economy, and competition), which are inextricably linked with the formerly mentioned core elements. Moreover, all these elements are linked to sustainability, which is expected to be an important factor for appropriating value from BMI.

In the same year, Voelpel et al. (2004) present a framework that is based on the four pillars customers, technology, business system infrastructure, and economics/profitability. They propose to address BMI in an interactive, circular process that takes into account specific environmental changes in each of the four pillars. Furthermore, the authors conclude that “organizations should continuously attempt to reinvent themselves” (Voelpel *et al.*, 2004, 270, 271), and thus constantly sense potentials for new value propositions. The IBM Institute for Business Value and IBM Global Business Services present a further BMI framework (cf. IBM, 2009). They distinguish between three main types of BMI: (1) industry model innovation—innovating the industry value chain, (2) revenue model innovation—product, service, and/or value development, as well as novel pricing models, and (3) enterprise model innovation—innovating by changing enterprises, partners, and/or networks (IBM, 2009).

The most recent of the BMI frameworks identified is the one of Yang et al. (2014). They propose a BMI framework that takes into account a company’s particular market type, components, and innovation tools. Thus, the who, the what, and the how of BMI can again be found in their concept. Apart from that, they not only explicitly include specific components into this process, namely company (competency), value (product), customer (market), and profit (cost), but also integrate particular innovation tools and their related procedure, combination, and internal evaluation.

The six previously described BMI frameworks do not share many similarities or characteristics. With the exception of the BMI framework of Mahadevan (2004),

which is partly based on the findings of the study by Deloitte (2002), the frameworks were developed independently, thus not following a process of accumulating knowledge. Moreover, they are rather different in nature and driven from various perspectives, comprising a knowledge management (Malhotra, 2000), an organizational (Voelpel *et al.*, 2004), a strategy and management (Deloitte, 2002; IBM, 2009), and a conceptual perspective (Mahadevan, 2004; Yang *et al.*, 2012).

These findings as well as our general lessons learned from the literature analysis underline the previously mentioned heterogeneous diffusion of BMI knowledge (cf. Zott *et al.*, 2011; Schneider and Spieth, 2013; Carayannis *et al.*, 2015). Considering the number of BMI studies identified, we found a considerable body of BMI knowledge, which, however, seems to be mostly scattered in different areas of application and/or different fields of research, supporting the statement of Zott *et al.* (2011, p. 1019) according to which the “literature is developing largely in silos”.

As already mentioned by Boons and Lüdeke-Freund (2013), Bocken *et al.* (2014, p. 42), Massa and Tucci (2014), as well as Wirtz *et al.* (2016a) this situation may benefit from a normative approach that integrates existing knowledge into unified concepts, and thus supports a common understanding of BMI (Lambert, 2015; Taran *et al.*, 2016). In this context, an integrative conceptual framework can be of particular importance since it provides a synthesis of existing knowledge and explains key factors, elements, dimensions, and the presumed relationships among them (cf. Miles and Huberman, 1994), supporting science and management in further developing and implementing BMI. Against this background, this study contributes to academic and practical knowledge creation by conducting a literature-based investigation that brings together scattered insights of BMI into an integrative BMI framework.

## **Integrative perspective**

In this section, we first present an overview of the identified elements of the analyzed BMI frameworks. Building upon these insights, derived from the findings of the literature-based analysis, we gradually elaborate an integrative BMI framework. Each step of this

deductive approach is finally described with a practical example of Google to illustrate the respective aspects of the conceptual BMI framework in a real-world context. In this sense, Google – a company which looks back at nearly two decades of successful BMI (Goggin, 2012; Steiber and Alänge, 2013; Wirtz, 2016) – serves as a kind of exemplary case study.

To systematically identify the elements of the BMI frameworks, we had to determine reasonable dimensions in a first step. For this purpose, the frameworks were scrutinized and their individual dimensions were compared. This approach led to six dimensions, which formed the basis for a systematic analysis of the components of the respective BMI frameworks: (1) BMI macro-environmental elements, (2) BMI micro-organizational elements, (3) BMI core elements, (4) BMI tools and technique elements, (5) BMI knowledge management elements, and (6) BMI outcome/impact elements. Table 1 summarizes the results of this analysis.

The analysis of the BMI components of the distinctive BMI frameworks shows a rather unbalanced, heterogeneous picture. Especially the spectrum of BMI elements, the intensity of use, and the degree of abstraction reveal substantial differences. The spectrum and intensity of use of BMI elements are qualitative evaluations that are based on the identified elements of the respective BMI frameworks. The low intensity of the dimensions BMI tools and technique elements as well as BMI knowledge management, for instance, reflect that these dimensions only show few elements in comparison to the other dimensions.

The degree of abstraction varies since some authors aggregate the elements on a higher level, while other authors go more into detail. The BMI framework of IBM (2009), for instance, only provides three core elements that summarize all relevant aspects and provide the underlying BMI strategies. These findings underline the importance of the pursued approach, developing an integrative BMI framework in the course of a normative process to help create a common understanding of the BMI concept (cf. Boons and Lüdeke-Freund, 2013; Bocken *et al.*, 2014; Massa and Tucci, 2014; Wirtz *et al.*, 2016a).

Authors/Elements	BMI macro-environmental elements	BMI micro-organizational elements	BMI core elements	BMI tools and technique elements	BMI knowledge management elements	BMI outcome/impact elements	Spectrum of BMI elements
<b>Malhotra (2000)</b>	Radical discontinuous change	Organizational need for new knowledge and knowledge renewal			<ul style="list-style-type: none"> <li>- Information processing model</li> <li>- Sense-making model</li> </ul>	<ul style="list-style-type: none"> <li>- Knowledge creation</li> <li>- Knowledge renewal</li> </ul>	
<b>Deloitte (2002)</b>	External factors	Internal capabilities	<ul style="list-style-type: none"> <li>- Who</li> <li>- What</li> <li>- How</li> </ul>			<ul style="list-style-type: none"> <li>- Superior shareholder value</li> <li>- Innovator advantages</li> <li>- Incumbent disadvantages</li> </ul>	
<b>Mahadevan (2004)</b>	<ul style="list-style-type: none"> <li>- Technology</li> <li>- Regulatory and economy</li> </ul>	<ul style="list-style-type: none"> <li>- Changing customer needs</li> <li>- Competition</li> <li>- Firm level issues</li> </ul>	<ul style="list-style-type: none"> <li>- Target customers (who)</li> <li>- Value propositions (what)</li> <li>- Value delivery system (how)</li> </ul>			Sustainability	
<b>Voelpel et al. (2004)</b>	Sensing strength, direction, and impact of technology	<ul style="list-style-type: none"> <li>- Change in customer needs/behavior</li> <li>- New customer value proposition</li> <li>- Sensing potential for value system reconfiguration</li> <li>- Sensing feasibility and profitability</li> </ul>	<ul style="list-style-type: none"> <li>- Customers</li> <li>- Technology</li> <li>- Business system infrastructure</li> <li>- Economics/profitability</li> </ul>			Competitive advantage	
<b>IBM (2009)</b>			<ul style="list-style-type: none"> <li>- Industry model innovation</li> <li>- Revenue model innovation</li> <li>- Enterprise model innovation</li> </ul>			Successful financial results	
<b>Yang et al. (2014)</b>		<ul style="list-style-type: none"> <li>- Company (competency)</li> <li>- Customer (market)</li> <li>- Value (product)</li> <li>- Profit (cost)</li> </ul>	<ul style="list-style-type: none"> <li>- Who</li> <li>- What</li> <li>- How</li> </ul>	<ul style="list-style-type: none"> <li>- Procedure</li> <li>- Combination</li> <li>- Internal evaluation</li> </ul>		<ul style="list-style-type: none"> <li>- Sustainability</li> <li>- Competitive advantage</li> </ul>	
<b>Intensity of use of BMI elements</b>							

○ Very low   ◐ Low   ◑ Moderate   ◒ High   ● Very high

**Table 1: Overview of identified BMI elements**

### Developing an integrative BMI framework

Building upon the insights of the identified BMI frameworks and elements, we derived six important components of a BMI framework: environmental BMI dimensions, central BMI dimensions, BMI techniques and tools, knowledge/information management, BMI intensity, and BMI outcome/impact. Each of these

components is outlined in the following by presenting the respective findings of the analysis of the literature and the corresponding conclusions for this study. Furthermore, each theoretically deduced component is illustrated with a practical example of Google to exemplify the respective aspects of the integrative BMI framework in a real-world context.

### Environmental BMI Dimensions

An often discussed aspect concerning BMI are external factors (e.g., deregulation, market transparency, globalization) that have led to an increasingly dynamic business environment (Porter, 2001; Brews and Tucci, 2004), which causes constantly changing stakeholder preferences (Teece, 2010). Thus, the entire business model field is “explicitly concerned with how firms interact with their environment” (Berglund and Sandström, 2013, p. 275). To account for these factors, Mahadevan (2004) presented a helpful frame for BMI by conceptually separating BMI according to its context, which not only provides systemic factors that drive the BMI cycle, but also its core that deals with “the operational details of the nature of innovation” (Mahadevan, 2004, p. 4).

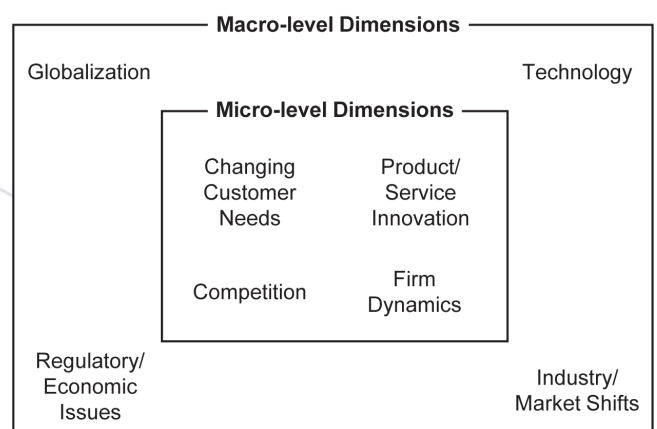
The framework generally follows this suggestion by separating important BMI elements into Environmental and Central BMI dimensions. In addition to the logical separation between Environmental and Central BMI dimensions, a further division of the Environmental BMI Dimensions seems reasonable since these may be macro- or micro-related (Deloitte, 2002). Particularly since much of the extant BMI research focuses on internal or organizational perspectives (Berglund and Sandström, 2013). A similar approach can also be found in the studies of Bucherer et al. (2012) and Carayannis et al. (2015), who divide the origins of BMI into external and internal triggers.

From a macro-level perspective, we could identify the elements Globalization, Technology, Environment, and Regulatory/Economic Issues (Brews and Tucci, 2004; Mahadevan, 2004; Voelpel et al., 2004; Habtay, 2012). Concerning scientific literature, especially elements like globalization, deregulation, and the Internet caused a massive change, bringing along an increasingly dynamic business environment (Brews and Tucci, 2004), which forces companies to continually modify their business models (Wirtz and Lihotzky, 2003; Voelpel et al., 2004; Agarwal and Helfat, 2009). In addition, technology-driven BMI has gained considerable attention. Although technology by itself does not have a single objective value, it can be commercialized through a business model (Chesbrough, 2010). Moreover, technology may pose a severe threat to entire industries since technology-induced BMI usually spreads out across entire markets (Jacobides et al., 2006), “its upstream and

downstream industries and thus, eventually, its overall architecture” (Gambardella and McGahan, 2010, p. 269).

Apart from macro-environmental challenges, such as economic shifts, regulatory effects, and technological changes, which force companies to innovate their business model (Linder and Cantrell, 2000; Bucherer et al., 2012; Boons and Lüdeke-Freund, 2013), altering customer preferences and competition (Jaworski et al., 2000; Mezger, 2014) as well as firm dynamics are seen as vital BMI triggers (Geels et al., 2008; Boons and Lüdeke-Freund, 2013). Against this background, we adapt the environmental BMI elements Changing Customer Needs, Product/Service Innovation, Competition, and Firm Dynamics, using the frameworks of Mahadevan (2004) and Voelpel et al. (2004) as well as the studies of Giesen et al. (2010) and Enkel and Mezger (2013). Summarizing, these previously described macro- and micro-environmental elements are expected to significantly influence the BMI behavior of companies (Mahadevan, 2004). The environmental BMI dimensions are presented in Figure 1.

The impact of the macro-level and micro-level environmental elements and associated BMI behavior can be illustrated well with the development of Google that is “one of the behemoths of the digital age” (Goggin, 2012, p. 742) and has many times successfully demonstrated its BMI capabilities by continuously creating new products and services and entering new business areas (Steiber and Alänge, 2013). When Google started its business operations in 1998 there have already been



**Figure 1: Macro-level and micro-level environmental dimensions of BMI**

popular search engines, such as Yahoo!, AltaVista, and Lycos (MarketLine, 2012a).

But Google had a better solution to deal with the new information paradigm, which came along with the rise of the Internet—from finding information to getting the right information. Building upon these changing customer needs, Google presented a straightforward service innovation, marketing the first search algorithm that takes into account the relevancy of the search results, which made the company quickly outperform its competitors, who still provided simple content searches (MarketLine, 2012a). Furthermore, Google entirely focused on the provision of their search engine front-end instead of integrating news, offers, and advertisements into their landing page. Given the situation that many users did not have fast Internet access at that time, using the Google search was convenient due to its low bandwidth requirements. In a nutshell, Google's search solution was abreast of the trend, or in other words, an excellent response to the environmental macro and micro BMI elements.

Later, Google continued to successfully introduce various BMIs. As an example, we use Google's Android platform in the following, which they developed to enter the mobile phone market (Goggin, 2012). Following Rubin (2007), Android is an open platform, including "an operating system, user-interface and applications—all of the software to run a mobile phone, but without the proprietary obstacles that have hindered mobile innovation". Google early identified the changing customer needs with regard to mobile Internet use, which came along with the technology development in the smartphone and network business.

This global development caused a rapid industry shift in the mobile phone market, creating new balances of power. Therefore, traditional mobile phone companies, such as RIM or Nokia, lost their leading position within less than five years (MarketLine, 2012b). While Google's main competitors in this new field (Apple and RIM) kept on selling mobile devices with proprietary software, they chose a different approach—using and extending their software developing competencies—and created an open platform in coordination with strong partners like Samsung, LG, HTC, T-Mobile, and Verizon. By providing a platform-independent software for free,

Google was able to quickly increase its Android distribution (Goggin, 2012), clearly outperforming its rivals (e.g., iPhone 13.9%, Windows 2.6%, BlackBerry 0.3%, Others 0.4%) by reaching a market share of 82.8% in the second quarter of 2015 (IDC, 2016).

#### Central BMI Dimensions

Concerning the Central BMI Dimensions, Deloitte (2002) and Yang et al. (2014) use a threefold division into 'Who', 'What', and 'How', which is also applied by Mahadevan (2004), who furthermore refers to target customers, value propositions, and value delivery system in this sense. These BMI factors basically form the character of the BMI: innovation through market and target group changes (Yang *et al.*, 2014), through value proposition changes, altering the value creation, and/or through value constellation changes that transform the value chain (cf. Magretta, 2002; Teece, 2010; Chesbrough, 2013). Similarly, Amit and Zott (2012) apply the factors 'Who', 'What', and 'How', also referring to a company's customers, activities, and value creation, or Johnson et al. (2008), who summarize this in one factor, which they call customer value proposition and which reflects the three dimensions target customer, job to be done, and offering. For this reason, the BMI Factors that contain the elements 'Who' (Target Group/Customers), 'What' (Value Proposition), and 'How' (Value Constellation), represent a vital element of the Central BMI Dimension.

The Android platform represents a suitable example to illustrate this. The value proposition [What] is to provide a comprehensive platform that supports device-independent mobile access to information (Goggin, 2012) and that serves as "foundation for many new phones and will create an entirely new mobile experience for users, with new applications and new capabilities we can't imagine today" (Rubin, 2007). This BMI targets at three different groups [Who]: users (e.g., individuals, companies), network carriers (e.g., Verizon, Sprint, T-Mobile), and handset manufacturers (e.g., HTC, Samsung, LG). Since the platform is for free, Google does not generate direct cash inflows from the provision of Android. However, it serves as a platform [How] that is supposed to make users use Google consumer apps, which finally allow to capitalize the BMI (Goggin, 2012).

Given the previous frameworks' focus concerning the BMI Factors, we are missing a further important aspect of BMI, which so far has not been of particular relevance in the studies identified. Here, it needs to be kept in mind that business models are not static (Bucherer *et al.*, 2012; Achtenhagen *et al.*, 2013) and that BMI "can occur in a number of ways: by adding new activities, by linking activities in novel ways—or by changing one or more parties that perform any of the activities" (Amit and Zott, 2012, p. 45).

As a result, innovating an existing business model, developing a new one (Schneider and Spieth, 2013; Mezger, 2014), modifying organizational activities and structures, and adapting and building up new resources and competencies (Amit and Zott, 2001; Voelpel *et al.*, 2004; Mezger, 2014) in regard to BMI has an impact on the components of a business model (Demil and Lecocq, 2010; Bucherer *et al.*, 2012; Boons and Lüdeke-Freund, 2013). Hence, an organization has to take into account the causal link and interaction between the targeted BMI Factors and the respective business model components (Casadesus-Masanell and Ricart, 2010; Enkel and Mezger, 2013).

Moreover, BMI can also have an impact on the BMI process itself, changing the way how BMI has been conducted so far. Concerning the process of BMI, manifold approaches can be found in the scientific literature (e.g. Linder and Cantrell, 2000; Pateli and Giaglis, 2005; Johnson *et al.*, 2008; Sosna *et al.*, 2010; Teece, 2010). The distinctive approaches differ in scope and procedure as well as their organizational integration, showing that there are various ways to handle BMI. This shows that the BMI process is not a static construct and is applied in different forms. Against this background, the BMI process itself can also be modified in terms of adjustments and optimization to increase BMI efficiency and effectiveness or to adapt the BMI process to new organizational, strategic, or environmental settings. Thus, the BMI components and the BMI process should be considered separately when dealing with BMI. For this reason, BMI Areas forms a second element in the Central BMI Dimensions.

Google's business model, for instance, is made up of several sub-models or components (e.g., procurement model, revenue model, competencies/resources

model, etc.). Given the initial business model that covered the search engine activities, the further BMI developments of the company constantly required changes of particular components to adjust the business model to the particular requirements (Wirtz, 2016). Again referring to the Android platform, this means that various components had to be adjusted.

Taking the finance model, for example, the concept of low upfront investments, immediate returns, and short-term interim financing from the search engine business did not cover the needs anymore. Android required higher initial investments as well as prolonged return and financing periods. From a revenue model perspective, Google extended its former revenue per click and adword activation revenues with royalties and revenue from transaction payment. Furthermore, new competencies and resources were needed to set up, maintain, and develop the Android platform, leading not only to an adjustment of the competencies/resources model, but also to new cooperations with network carriers and handset manufacturers, which entails amending the network model.

#### Dynamics between environmental and central BMI dimensions

A substantial finding of Mahadevan (2004) was that the elements of the Environmental and Central BMI Dimensions are inseparably intertwined and interact dynamically since it is impossible to avoid diffusion of innovation, which makes the environment influence the center and vice versa. Considering that BMI is seen as vital competency to successfully act and react within today's dynamic, competitive business environment (Desyllas and Sako, 2013; Kastalli and van Looy, 2013), "it makes good business sense for companies to develop the capability to innovate their business models" (Chesbrough, 2010, p. 354). However, this also requires to possess the relevant knowledge about the external and internal elements (Zott *et al.*, 2011; Denicolai *et al.*, 2014) and to have the skills to sense and identify BMI opportunities (Mezger, 2014) as well as to change drivers (Frankenberger *et al.*, 2013). Therefore, an effective interface management, "which may feature the combination and interaction of different knowledge resources and flows" (Denicolai *et al.*, 2014, p. 249), is of paramount importance.



In this context, Yang et al. (2014) propose innovation tools that support systematic BMI assessment through procedure, combination, and internal evaluation. This is supported by Eppler et al. (2011), who recommend to use tools and methods that provide structure and guidance for systematic knowledge creation to pool “information from inside and outside” (Eppler *et al.*, 2011, p. 1324), and Denicolai et al. (2014), who also suggest to exploit internal and external information. Against this background, we add the element BMI Techniques & Tools, serving as systematic interface between the Central and Environmental BMI Dimensions, to the integrative BMI framework.

According to Malhotra (2000, p. 5) “new business environments are characterized not only by rapid pace of change but also discontinuous nature of such change”. He translates these requirements into an organizational need for knowledge creation and renewal. To deal with this need, he proclaims two important factors, information processing and sense-making, which form a dynamic process to constantly fuel and inform BMI to create and renew knowledge. Kastalli et al. (2013) underline these findings by emphasizing the importance of understanding the customer and interpreting the signals of the market.

Likewise, Denicolai et al. (2014) propose to use a process of recursive learning in order to exploit the organization’s external knowledge. Therefore, the element Knowledge/Information Processing & Sense-making, also serving as interface between the Central BMI and Environmental BMI Dimensions, is a crucial element of the integrative BMI framework.

These elements are also important factors for the successful BMI of Google. Although Google has an aggressive acquisition strategy to grow and create innovation, external knowledge interaction is one of their key innovation enablers. Therefore, they cooperate closely with researchers and universities and “establish specific units with responsibility for external screening and sourcing” (Steiber and Alänge, 2013, p. 259). The former CEO of Google Eric Schmidt calls the process of sensing, gathering, and connecting the relevant information that is needed for innovation “combinatorial innovation” (Schmidt, 2014, p. 74). Thus, it is about having the systems and tools to gather the information (BMI Techniques & Tools) and transform it to applicable knowledge through evaluation, validation, and combination (Knowledge/Information Processing & Sense-making). The components environmental BMI dimensions, central BMI dimensions, BMI techniques

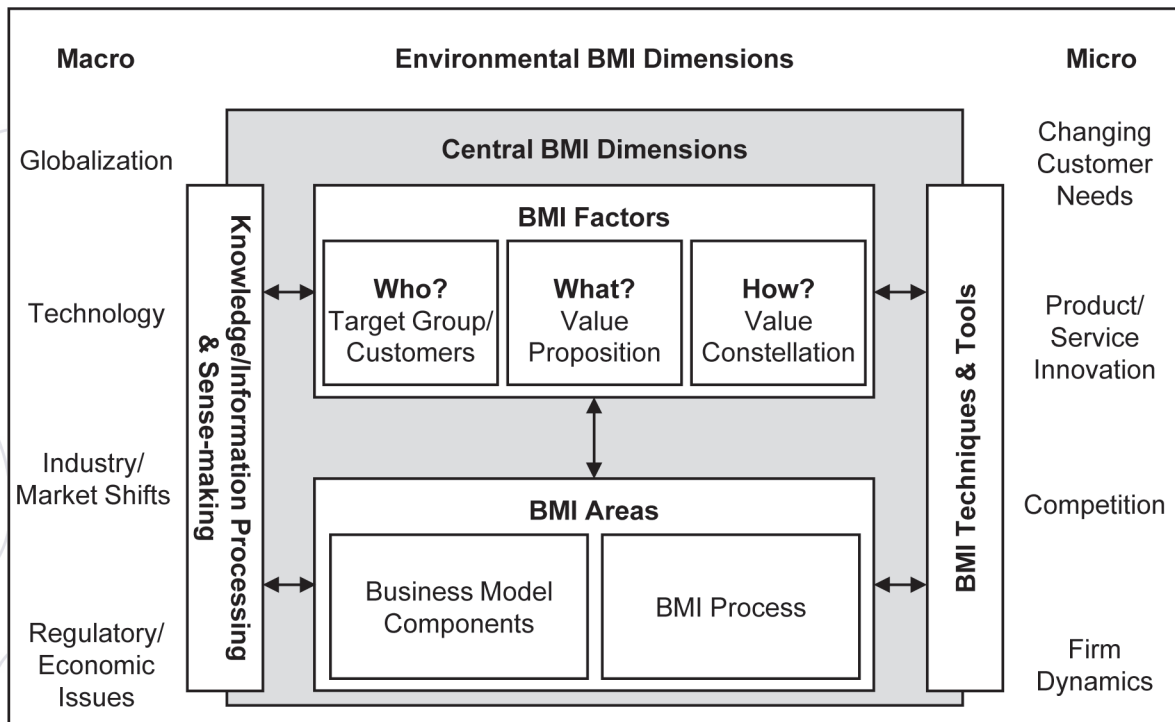


Figure 2: Dynamic structure of environmental and central BMI dimensions

and tools, and knowledge/information management as well as the presumed relationships within the integrative BMI framework are summarized in Figure 2.

#### BMI intensity

Given the information from the BMI Factors and BMI Areas and comparing them with the status quo allows to derive the required business model changes. So far, “few authors discuss the degree of innovativeness of business model innovations” (Bucherer *et al.*, 2012, p. 192). In the same vein, the identified BMI frameworks did not take into account BMI intensity. Although the literature on BMI has not found a consensus yet and fails to provide a concise categorization, it can be said that there are different BMI intensities (Bucherer *et al.*, 2012).

While most BMIs are expected to be moderate or incremental, only requiring slight business model modifications (Mitchell and Bruckner Coles, 2004; Hargadon, 2015), there are other opinions that mainly see radical or disruptive BMIs (Markides, 2006), which reflect a massive business model change, leading to substantial discontinuities of the existing business model (Bucherer *et al.*, 2012). Considering insights from the literature, this differentiation is also important since different intensities of change are connected with different risks and efforts of change (Wirtz, 2011). Thus, BMI Intensity – ranging from moderate to radical innovation – is an important element of the integrative BMI framework.

As mentioned before, Google constantly expanded its business model by entering various new domains that are well beyond its initial expertise, in particular, software, email, social networking, publishing, navigation, video, and so on (Goggin, 2012). These ongoing developments continuously influence Google’s business model. However, not all of them have the same impact since some only require minimal business model changes. Let us, for example, take the web service Google Books that provides access to book and magazine content in the fashion of an online library, thus allowing users to browse books and magazines online and to buy or borrow books from the Google library (Google, 2016). From a BMI perspective, this reflects a moderate innovation. Although there are significant technological differences (e.g., scanning books instead of crawling the web, distinctive content

presentation, modified revenue generation), it basically just represents an extension of the primary search engine business model.

In comparison, the situation with regard to the previous Android example is different. This radical innovation required a tremendous modification of the business model and its components since the value proposition, value constellation, and the entire value creation process became subject to substantial change. From a business model component perspective, developing and marketing Android had a massive impact on the sub-models. The network model, for example, had to be modified since new business partners needed to become part of the development and marketing process (e.g., open developers, network carriers, and handset manufacturers). Moreover, developing platform software requires new competencies and additional resources, which calls for an adaption of the competencies and resources model. Similarly, the new product/service offer demands an entirely distinctive manufacturing and revenue model. These examples underline the importance of being aware of the BMI Intensity since a moderate innovation should carry less risk and take less effort compared to a more intense innovation.

#### BMI outcome/impact

From a BMI outcome/impact perspective, we identified several elements in the previous BMI frameworks, covering aspects such as knowledge creation, sustainability, shareholder value, competitive advantage, etc. (cf. Malhotra, 2000; Deloitte, 2002; Mahadevan, 2004; Voelpel *et al.*, 2004; IBM, 2009; Yang *et al.*, 2014). By complementing these findings with the insights of the literature analysis, we derived the following three key elements that are of vital importance to BMI: BMI Sustainability, BMI Competitive Advantage, and BMI Value Creation/Capture.

As mentioned before, Mahadevan (2004) addresses the degree of sustainability of BMI, which is expected to be closely related to BMI success. Therefore, BMI should take into account the factors that protect and expand its sustainability. Moreover, the overarching goal of achieving competitive advantage has to be kept in mind during BMI activities since this is not an automatic, implicit supplement (Teece, 2010). Nevertheless, successful BMI “can itself be a pathway to competitive

advantage if the model is sufficiently differentiated” (Teece, 2010, p. 173) and difficult to replicate (Magretta, 2002; Günzel and Holm, 2013).

In this context, Amit and Zott (2012, p. 42) have a fitting example: “Someone might come up with a better MP3 player than Apple’s tomorrow, but few of the hundreds of millions of consumers with iPods and iTunes accounts will be open to switching brands.” However, successful BMI may also produce copycats that can finally limit “the innovator’s ability to take advantage of its idea” (Casadesus-Masanell and Zhu, 2013, p. 480). Thus, BMI Sustainability is considered an important element of BMI (cf. Carayannis *et al.*, 2014; Carayannis *et al.*, 2015). Similarly, the previously mentioned concept of competitive advantage is generally seen to be a key source of BMI (Mitchell and Coles, 2003; Schindehutte *et al.*, 2008; Eppler *et al.*, 2011; Eurich *et al.*, 2014). Moreover, successful BMI can produce business models that are a competitive advantage themselves (Chesbrough, 2010; Boons and Lüdeke-Freund, 2013). Thus, BMI Competitive Advantage is a further element of the integrative BMI framework.

The very successful market introduction of the Android platform for smartphones provides a good example of the importance of sustainable competitive advantage. RIM, the company that invented the BlackBerry device, for instance, had transformed the mobile phone industry and reigned the business phone market for years. By including a QWERTZ keyboard and applications, such as email, organizer, and corporate data access, RIM quickly became a worldwide market leader in the corporate mobile phone market (MarketLine, 2012b), allowing them “to capture some of the value they create for their customers” (Eichen *et al.* 2015, p. 29).

Starting with the launch of the iPhone in 2007 and Google’s Android operating system in 2008, RIM had suddenly been unable to compete and their market share eroded considerably, leading to a deterioration of the entire company. Already two years after Google introduced the Android operating system, more Android than BlackBerry devices were sold (MarketLine 2012). This shows the importance of creating a sustainable competitive advantage since other competitors may develop an enhanced or new solution and quickly take on the competitive advantage.

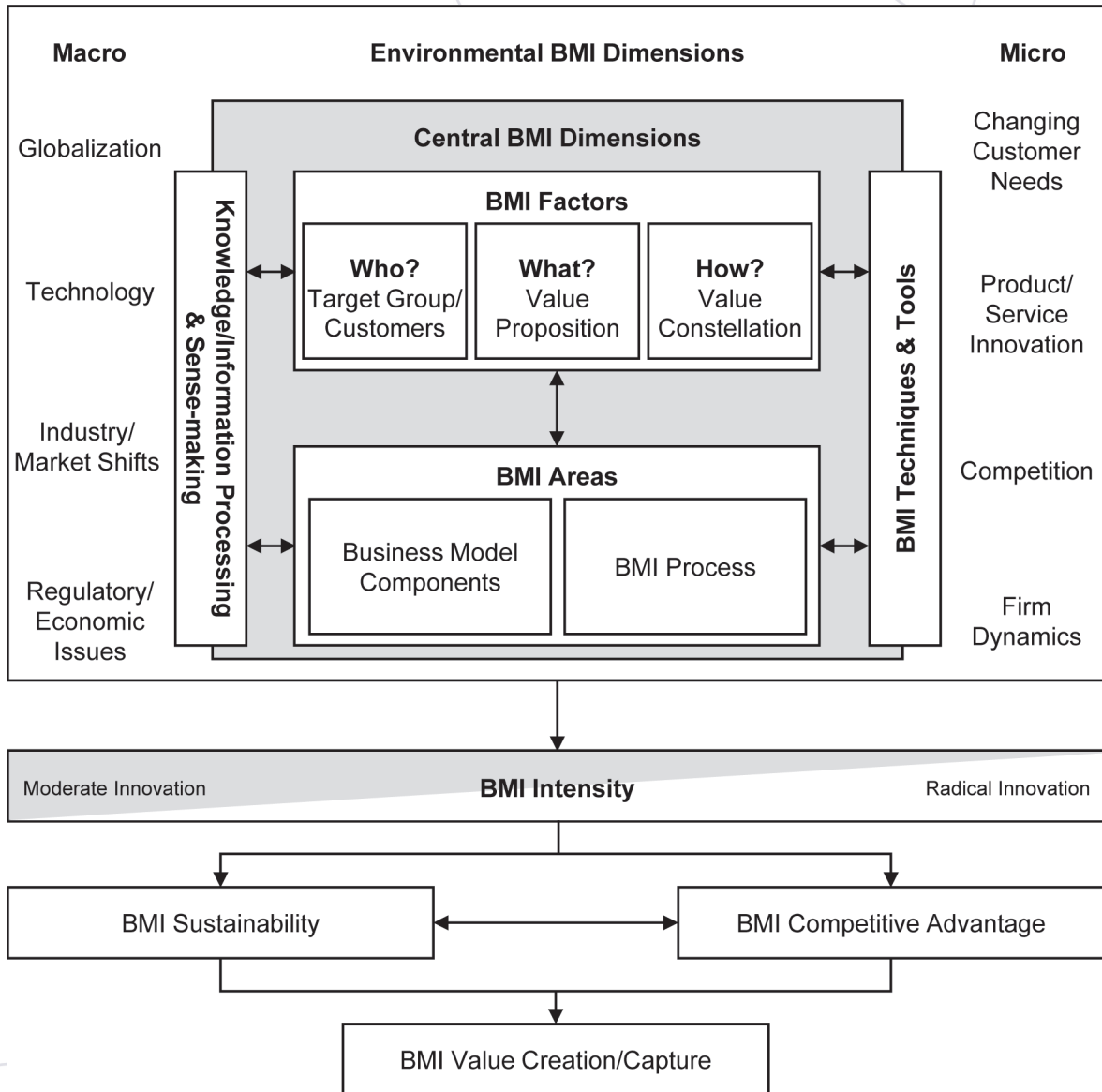
Last but not least, the study of Deloitte (2002) refers to superior shareholder value and the study of IBM (2009) to rewarding financial results as final outcome of successful BMI. Although these factors are common targets of companies, we believe that these do not reflect a holistic integrative approach since superior shareholder value may create the impression that BMI is only relevant to corporations. In addition, financial results seem to limit value creation to the financial aspects of the firm and rather show an orientation towards the past instead of strategic future value creation.

Against this background, we refer to a more general concept of value creation, which means that companies can derive returns if they “find ways to capture some of the value they create for their customers through their innovation” (Eichen *et al.*, 2015, p. 29)—irrespective of the character of these returns. Summing up, the overall objective of BMI is value creation/capture (Chesbrough and Rosenbloom, 2002; Amit and Zott, 2012; Mezger, 2014). Thus, the final element of the integrative BMI framework is BMI Value Creation/Capture.

When speaking of value creation, it is hard to find a better example than Google. Founded in 1998, Google went public in 2004. The share price at the initial public offering was USD 85 (Investopedia, 2016). At the end of 2015 it nearly surpassed the USD 800 mark (cf. Nasdaq, 2016). According to the Forbes magazine, Google has a market capitalization of USD 500.1 billion and an estimated brand value of USD 82.5 billion (Forbes, 2016). This success story is to a large extent a result of Google’s very successful BMI activities that provide the basis for sustainable competitive advantage, leading to various profitable revenue streams (e.g., keyword advertising, adword advertising, video advertising, transaction fees in the Google Play Store, licensing fees from software and cloud services, hardware sales, and so on). Summarizing, the integrative BMI framework is presented in Figure 3.

## Discussion and Conclusion

The point of departure of this exploratory study is the gap between the increasing importance of BMI in both academic literature and management (Casadesus-Masanell and Zhu, 2013; Fiel, 2013) and the limited conceptual assistance available to guide its scientific



**Figure 3: An integrative conceptual BMI framework**

development and practical application (Bucherer *et al.*, 2012; Frankenberger *et al.*, 2013; Bocken *et al.*, 2014; Wirtz *et al.*, 2016a). Against the background of the heterogeneous diffusion of knowledge across various disciplines and the need of companies for enduring BMI, mainly resulting from today's highly dynamic business environment, this study identifies and explores scattered insights of the BMI concept in the scientific literature and consolidates them into an integrative framework. For this reason, this investigation intends to contribute to BMI research in four ways: (1) enhance our understanding about the key elements and dimensions of BMI, (2) present further conceptual insights

into the BMI phenomenon, (3) supply implications for science and management, and (4) be a helpful guidance for future research on BMI.

Looking back at the literature-based analysis, we can underline previous statements of the field that although there have been massive efforts in the recent past to develop new insights, the gained knowledge is rather dispersed (Zott *et al.*, 2011; Schneider and Spieth, 2013; Carayannis *et al.*, 2015; Lambert, 2015). In total we could identify six BMI frameworks that examine BMI from different perspectives. Based on the broad derived set of BMI elements, we could elaborate

an integrative BMI framework, which—compared to the previous approaches – provides a more comprehensive, holistic picture of the elements and dimensions of BMI.

While from a conceptual and structural perspective, the derived integrative BMI framework can be regarded as an updated and extended version of the framework of Mahadevan (2004), particularly since it follows the same general logic of separating between environmental and central elements, it also includes pervasive modifications. When looking at the framework's far-reaching extension, the vast progress and knowledge generation that took place in the field during the past decade can immediately be recognized. Moreover, the combination of insights from the different BMI framework perspectives led to important conceptual findings.

The integration of BMI Techniques & Tools and Knowledge/Information Processing & Sense-making, which are two elements for connecting the central and environmental BMI dimensions in order to gather systematic information and create knowledge, is seen as a vital improvement since this matter has not been illustrated in previous BMI endeavors. Furthermore, the proposed conceptual combination of BMI Sustainability and BMI Competitive Advantage to finally achieve the overall target of BMI Value Creation/Capture is a helpful, abstract presentation of their relationship.

Apart from that, new elements were identified, which so far had not been considered in previous BMI frameworks (e.g., BMI Areas, BMI Intensity). This situation was particularly surprising since the associated elements (business model components, BMI process, and innovation intensities) are much debated subjects in the scientific literature. Concerning the BMI Factors (Who, What, and How), these elements seem to be solid components of BMI since these are well-established and applied in a similar fashion throughout manifold scientific studies (e.g., Deloitte, 2002; Magretta, 2002; Teece, 2010; Chesbrough, 2013; Yang *et al.*, 2014). For managers, the integrative BMI framework provides a tool that allows them to identify and reflect on critical issues, which are important for successful BMI. In this context, it can be applied as a reference system concerning organizational and strategic aspects (e.g., structural organization, methodical and organizational development, system infrastructure, and strategic

focus), as well as with regard to BMI audit and controlling activities. For this purpose, the elements of the integrative BMI framework have to be enriched with company-specific criteria and indicators that allow BMI evaluation and measurement. Furthermore, the integrative BMI framework can also be used in the form of a checklist since it presents important elements that have to be considered for successful BMI.

Despite the study's contribution to science and management, it also shows several limitations. Although the illustrative examples provide supplementary context for the deduced phenomena, they are only descriptive in nature (cf. Eisenhardt, 1989). Therefore, the examples do not support any statements concerning empirical validity. Furthermore, the examples are related to a very successful company in a growing and technology-driven environment that looks back at many years of successful BMI. The question remains, if case studies of less successful companies in other industries come to similar conclusions. Besides, given the vast amount of academic journals, it is possible that further important publications exist that may have escaped our scrutiny.

For future research, we suggest a trinomial approach to address the particular points in question of this study as well as general issues concerning the BMI concept. First, additional case studies, especially from organizations in different situations and environments, will provide further insights and help to broaden our understanding of BMI. Second, we recommend examining this study's findings by means of qualitative in-depth expert interviews to learn more about the significance of the individual elements and their interrelations, as well as if there are further elements that are relevant to the success of BMI and may have not been identified in this study.

Third, quantitative approaches are needed to validate the integrative BMI framework through confirmatory empirical methods. Especially its individual elements and their contribution to the success of BMI endeavors should be examined by using causal analytical analysis. Thus, the relationships between environmental and central BMI dimension elements, which are applied as exogenous constructs, and BMI Value Creation or Capture, which serves as endogenous construct, should be

investigated by using enlarged samples and longitudinal data. In summary, future research demands further qualitative and quantitative investigations to challenge and validate this study's findings and implications.

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