
The Business Model Cube

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Abstract

The amount of literature concerning business model (BM) has increased in recent years (Zott 2010, Teece 2010, Krcmar 2011). A definition and a generic language of the BM have been long under way. Many of the existing BM frameworks are not empirically tested but are just BM concepts, which lead to a large variety of definitions in scholarly and practical literature.

A commonly accepted and generic language of the BM is therefore highly needed to embrace the opportunities but also challenges of business models and business model innovation (BMI). A commonly accepted BM language will enable the BM research to take one step further to become an accepted academic theory.

The paper attempts to fill in a piece of this gap in BM literature by proposing an empirically tested framework and language of BM by answering the research question:

- “What are the dimensions of any business model?”

This paper proposes that any business model has seven generic dimensions. The purpose of this paper is to verify and describe these dimensions. Previous BM concepts and related academic frameworks are compared to these seven dimensions.

A BM Cube is finally proposed as a generic framework for working with any business model. The BM Cube presents a new approach and framework to BM literature. Two case studies are used to show how the BM language and the BM Cube can be used in practice. The case study empirically documents the existence of the seven dimensions and that the BM Cube is useable when mapping “TO BE” and “AS IS” BM’s.

Keywords: Business model Cube, Business, Business model, Business and Business Model language, Business Model levels.

1. INTRODUCTION TO THE BUSINESS MODEL CUBE?

The first discussion on BMs can be traced back to an academic article in 1957 (Fielt, 2011). However, the concept did not gain acceptance until the mid-1990’s (Fielt, 2011). The question — What is a BM? — has been raised, discussed and answered by many researchers in the last decade (Fielt, 2011). Porter (2001) argued that a “definition of a BM is murky at best. Most often, it seems to refer to a loose conception of how a business does business and generates revenue...” p. 73 (Porter, 2001). Morris *et al.* (Morris 2003), after reviewing existing theory on business models during late-1990’s to 2003, concluded that a business’s potential creation of value cannot be explained from the BM model theory, and

that “a general accepted definition has not yet emerged” p. 8 (Fielt, 2011). However, Osterwalder *et al.* (2004) summed up academic work on BMs from the past 20 years, and stated that a definition of a BM broadly relates to a blueprint of how a business should conduct its business (Osterwalder, Pigneur, & Tucci, 2005). They further argue that a BM is a set of elements, which can be referred to as building blocks that, by their interrelation, express the logic of how a business earns money (Osterwalder, Pigneur, & Tucci, 2005).

Many academia have, in the past, been highly recognized for their approach to the BM concept (Fielt, 2011). Important to note is the distinction between business (Abell 1980) and BMs, as a business is in our framework considered to have one or more BMs i.e. the multi business model approach (Lindgren 2012). Furthermore, all BMs can be referred to either “AS IS” BM — already operating in the market or “TO BE” BM — being innovated or prepared to be introduced into the market (Lindgren 2012).

From the BM concept’s infancy until today, it can be documented that the BM concept has naturally evolved and changed in relation to the BM context. Globalization and internet has increased businesses’ interdependency and today businesses are connected in physical, digital and virtual networks (Choi 2003) (Daft, 2010) (Peng, 2010). Thereby, it is possible to utilize competences across businesses BM’s and BMs’ boundaries in order to strengthen the BMI (Daft, 2010) (Lindgren 2012) of businesses. This tendency can be argued to have influenced the BM literature e.g. Chesbrough (2007) suggests that BMs should be opened i.e. Open Business Model (OBM), which includes that businesses should utilize the dimensions and components of BMs of other businesses within their BMs.

It has been argued that until 2007, the BM literature was primarily regarding closed BMs (CBMs), whereas BMs were bound to the focal business, and thereby not open to other businesses (Lindgren, 2011). The CBM argued by Chesbrough (2007) was not deemed fit in the global business model ecosystem, which requires openness and interfaces being able to comprehend interfacing with other businesses’ BMs. Chesbrough (2007) further claims that CBMs delimit the potential value and effective use of BMI. BMI, as mentioned in the introduction, refers to the reinvention of current BMs dimensions or creation of new dimensions in order to create advantages to the business. Thus, Chesbrough’s (2007) way of thinking of BMIs, as being open, has become the foundation of the development of a new and open network-based BM innovation concept. (Chesbrough, 2007) (Daft, 2010) (Lindgren, 2011). BMs are becoming more dynamic in their construction and today’s BMs may easily be outdated for use tomorrow. Lindgren (2011) suggests that new BMs should serve as platforms for long-term and continuous BMI — and development of other BMs. Any business model is proposed as a platform for other BMs and BMI — thereby developing a multitude of BMs.

2. INTRODUCTION TO THE BUSINESS MODEL CUBE

Today, the term ‘business model’ is everyday and everybody’s language in business, and of business model academia’s. Even national governments, EU commission and US government use the term Business Model. The increased awareness of BMs (Zott 2010, Teece 2010, Casadesus-Masanell 2010, Krcmar 2011) have intensified the search for a generic business model language. However, with increased use and research of BM the fuzziness on how the BM really is constructed has increased even more.

The focus on being first with a generic and commonly accepted BM language has increased drastically in recent years (Taran 2009, Zott 2010, Fiet, 2011). The emphasis on the BM's dimensions has been the topic of many academic papers and work (Magretta 2002, Osterwalder 2002, Johnson 2008, Chesbrough 2010, Osterwalder 2011, Kremer 2011). Many have been focusing on the question of how many dimensions does the BM really consist of. Some propose 4, while others propose 6, 9 and 12 dimensions. This raises the question to, how is a business model really constructed and will we ever be able to find the generic dimensions and construction of the BM? Further, can we distinguish one BM's construction from another BM or are they really built around the same generic dimensions?

These questions imply the increasing importance of thoroughly knowing and finding the dimensions of the BM. This question is also related to the question of when can we talk about a new BM — an incremental and/or radical changes of a BM (Peng, 2010)(Lindgren, 2011) and does that influence the generic construction of the BM.

The focus in this paper is therefore primarily on the dimensions and construction of any BM although this is no longer deemed sufficient to cover the whole BM theory framework as it is just one focus of many — a fragmented part of the whole business model environment, research and discussion. Today, the focus of the BM seems to be changing towards a more holistic BM discussion taking in the BM's relations to other BMs and the BM's environment — leaving the basic BM dimensions and constructions behind. The focus of the OBM (Chesbrough, 2007) (Daft, 2010) and the innovation of BM (Osterwalder, 2011) seems to have taken nearly all research attention.

In an ever-changing and increasingly competitive global market, which according to Friedman (2007) is a result of the ongoing process of globalization and business model change, Chesbrough (2007) emphasizes the need for even more BMs, including developing open and different businesses models. However, how can a business follow this advice without knowing the basic construction of the BM? As the basis of any BM discussion, we must begin by understanding, defining and testing the generic construction of the BM — in our sense what we call the dimensions of the BM.

In our study, we bridge BM frameworks from different business model frameworks to the BM CUBE concept (see Figure 1).

We try hereby to find BM dimensions that everybody seems to acknowledge and add those we believe are missing. We try to merge those dimensions, which are overlapping and we try to take out those dimensions that are not vital for a BM to operate. From this point of entry, we test our BM dimensions in two BM case studies to verify empirically our hypotheses of the existence of seven dimensions of any BM.

3. DESIGN/METHODOLOGY/APPROACH

The methodology applied in the paper is structured around deductive reasoning. First, a theoretical background of business model theory on each dimension of a BM is presented to provide a foundation for commonly accepted and acknowledged dimensions of a BM. To verify the existence of the dimensions of the BM and the usability of the BM cube, two business cases are presented — the Vlastuin Business Case and the HSJD business case. To “stress test” the generic use of the BM Cube framework, the cases represent two different businesses with different BMs. Both cases are also chosen to exemplify the

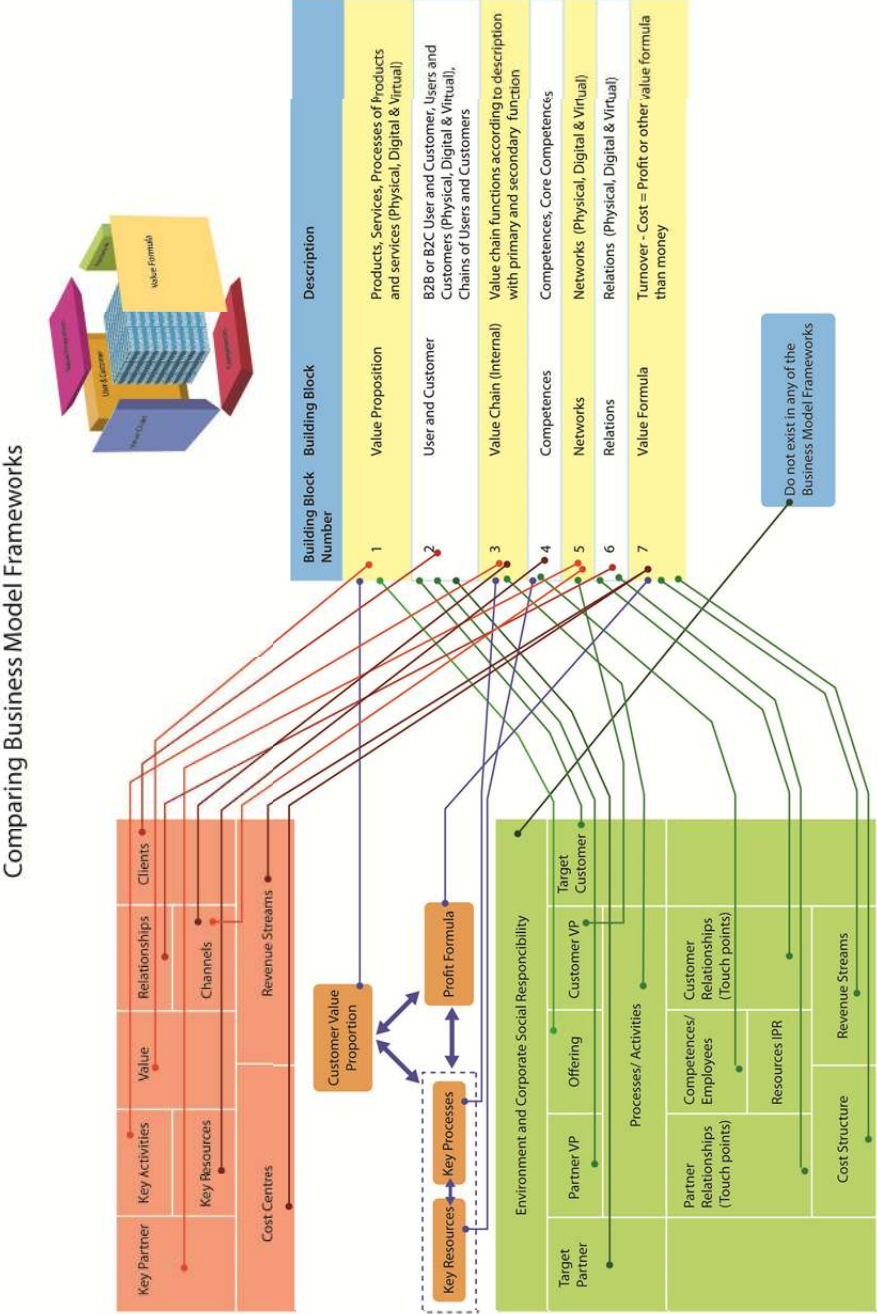


Figure 1 Illustration of comparison between different BM frameworks related to the BM Cube.

concept of the BM cube in use of “TO BE” and “AS IS” BM’s. “TO BE” BM’s are considered under construction — and maybe lacking one or more of the seven dimensions — and “AS IS” BMs are considered to be already operating in the market.

The information and data from the two cases are gathered through active participative research (Wadsworth 1998) carried out over three years in the EU FP 7 IOT project Neffics (Neffics 2013). Based on these cases supplemented with other empirical uses cases and tests, a final definition of the BM cube concept was formulated and is illustrated in the paper. A detailed test and confirmation of the BM cube is conducted and shown in the paper which has also been empirically tested in several other businesses (Appendix 0). The BM Cube has been tested in function with different use cases on the Neffics BM software platform (Neffics 2012) together with the Dutch ICT provider Cordys (www.Cordys.NL) and the Norwegian Software provider Induct (www.Induct.com). The BM Cube together with the VDML standard is being proposed in 2013 as an OMG standard (www.OMG.org).

4. DIMENSIONS, CONCEPTS AND LANGUAGE OF A BUSINESS MODEL

The term business has been defined by reputed academia from several dimensions. Abell (Abell 1980) defined a business by just three dimensions — **customer functions** — (values), **customer groups** (customers) and **customer technology** — (production technologies and process technologies). Porter (Porter 1985) argued that a business should be defined by its **suppliers, buyers** (customers) and **value chain activities**. (Hamel 1980) argued that a business could be defined by its **competences** and its **core competences**. Vervest (Vervest 2005) argued that a business could be defined by its **network** and how it organized its business together with network partners and Johnson (Johnson 2008) defined the business as how it created **value** to the **customer**. Håkonson (Håkonson 1980, Amidon 2008, Alee 2011, Russels 2011) defined the business from its **relations**. **Profit maximization** has been the central assumption in business and managerial economics (Henry and Haynes 1978) and the reasons for the stress on profits has been that it is the one pervasive objective running through all businesses; other objectives according to Henry and Haynes have been more a matter of personal taste or of social conditioning and were variable from business to business, society to society, and time to time. The survival of a business has until today very much been considered as depending upon its ability to earn profits where profits have been the business measure of its success (Henry 1978). The reason for profits emphasizing profits is also its convenience in analysis and it is easy to construct **formulae** on the assumption of profit maximization. It has been much more difficult to build models based on multiplicity of **value formulae**, especially when these formulae are concerned with nonmonetary factors as “fair”, the improvement of public relations and e.g. the maintenance of satisfaction to a customer. However, other value formulae than profit formulae have become very popular — even more popular than profit — these days to business especially as a reaction to e.g. the financial crisis and the global heating.

From these acknowledged academic works, we found some generic dimensions that support the idea that any business could be defined by such generic dimensions.

4.1. Value proposition dimension

All business models we checked in our research (Appendix 1) acknowledge that any business offers values. We define these as value proposition offered to the customers or users. This can be in the form of products, services and/or process of services and products (Appendix 6 Table7). Values are offered by the business as related to the *customer functions* that the business offers to solve for the customer (Abell 1983). Customer values can be products — a light bubble, services — an installation of a lamp or solutions to a specific lighting to a building or a value proposition process — a specific process consisting of lamps, installation and lighting through a certain time period delivered in a certain process to the customer. Kotler (1983) supports this argument by expressing that any business delivers or offers values in a form as products and/or services and/or process. (Magretta 2002, Osterwalder 2002, 2012, Johnson 2008, Chesbrough 2008, Casadesus-Masanell 2010, Teece 2010, Zott 2010).

The literature of business process engineering (Hammer 1990, Davenport 1990) increases the value proposition dimension as it argues for a value proposition process and this is further supported by Chan (Chan 2008) talking about a value proposition process before, under and after a certain value proposition exchange is carried out. A value proposition process hereby takes in the time aspect of any value proposition exchange and extends the value proposition offer from any business to more than just products and/or services.

4.2. Customers and/or User dimension

All academia and practitioners we checked agree that business serves customers or/and users (Appendix 1). “*A successful business is one that has found a way to create value for its customers — that has found “a way” to help customers or/and to get an important job done* (Johnson 2008). “*It’s not possible to invent or reinvent a business model without first identifying a clear customer value proposition*” (Johnson 2008).

Here, we draw a distinction between customers and users. Customers pay with money — “*there is no marked – Business – if the customers do not pay*” (Kotler 1983), whereas users (von Hippel 2005) do not pay with anything or pay with other values.

Business Model theory (Appendix 1) until now has only considered the business model related to customers. However, as we will see later and as von Hippel argued users can be highly valuable to business by “paying” with other values.

4.3. Value Chain Functions [Internal Part] dimension

Any operating business has functions which are (Porter 1996, Sanchez 1996, 2000) able to “offer” value propositions and serve the customers and/or users with values. Most of the academia frameworks we checked acknowledge this but few are very concrete about which functions and some have not even mentioned these.

A value chain function list could be adapted from Porters Value Chain framework (Porter 1985, 1996) including primary functions — inbound logistics, operation, out bound logistics, marketing and sales, service — and support functions — procurement, human resource management, administration and finance infrastructure, business model innovation. We changed Porter’s product and technology development support function to a broader support function, which we call Business Model Innovation function, as we believe that BMI covers Porter’s two support functions. The BMI function was not

The Business Model Cube

Primary Functions	Support Functions
INBOUND LOGISTICS Examples: Quality Control, Receiving raw material's control, Supply Schedules	Business Model Innovation Examples: Innovation on the 7 BM Dimensions
OPERATIONS Examples: Manufacturing, Packaging, Production Control, Quality Control, Maintenance	Administration, Finance Infrastructures Examples: Legal Accounting, Financial Management
OUTBOUND LOGISTICS Examples: Finishing Goods, Order Handling, Dispatch, Delivery Invoicing	Human Resource Management Examples: Personnel, Lay Recruitment, Training, Staff Planning
SALES & MARKETING Examples: Customer Management, Order Tracking, Promotion, Sales Analysis, Market Research	Procurement Examples: Supplier Management, Funding, Subcontracting, Specification
SERVICING Examples: Warranty, Maintenance, Education and Training Upgrades	

Figure 2 Value Chain functions — primary and secondary function list of any BM.

considered by Porter at the time he introduced the Value Chain Model. Porter was, at that time, primarily focusing on products and the activities of the value chain. We propose the list of Value Chain Functions [Internal Part seen in Figure 2] to be carried out in any BM.

Any operating business needs to have some of these functions in some degrees — which Porter refers to as activities that are carried out to enable a business function and be able to fulfill its purpose — either by itself or carried out by others. The result of carrying out these functions is value added and/or less costs (Porter 1996) which can be proposed as value propositions.

Porter's list was originally described as activities and developed on the background of an operating business. It was not particularly made for “TO BE” business — entrepreneurs, new or changed business and business that was in a “phase of BMI” before market introduction or made ready for operation. Our model acknowledges “AS IS” activities but we find that it is necessary to include also the functions of a “TO BE” BM that is not yet operating and have activities.

4.4. Competences dimension

Very few BM frameworks comment and address the questions — How are the activities and functions carried out? Who takes care of the value chain functions? According to Prahalad and Hamel (Prahalad 1990), any business can have competences but only few businesses would have core competences. According to Prahalad and Hamel, competences can be divided in four groups — technology, human resource, organizational system and culture. Technology covers product-, production- and process technologies, human resources cover the employees used in the business, organizational system and

culture of the business (Tillich 1951, 1990). The business can choose either to use own competences or network partners competences to carry out the values chain functions.

4.5. Network dimension

Håkonson argued that any business is in a network of other businesses and thereby “*no Business is an Island*” (Håkonsson 1990). Any business is a network-based business and these networks could either be physical, digital or/and virtual (Child and Faulkner 1995, Goldmann 1998, Hammel 2001, Choi 2003, Vervest 2005, Lindgren 2011). Very few of the BM frameworks mention networks, however, historically networks have been more important and visible in the latest 10 years of BM research.

4.6. Relation dimension

Businesses are related through tangible and intangible relations (Provan 1983, Provan 2007, Provan 2008, Alee 2011,) to other businesses customers, competences and networks (Håkonson 1990, Amidon 2008, Russels 2012). Businesses are related through strong and weak ties (Granovettar 1973) Businesses send value propositions to other businesses through relations and receive value propositions from other businesses through relations. Relations can be one to one or one to many. Relations can be visible and invisible to humans or machines (Lindgren 2012).

Tangible and intangible relations are used in the business to deliver values (Alee 2011). Businesses relate their value proposition, users/customers, value chain functions, competences and network through relations. Relations are used for creating, capturing, delivering, receiving and consuming values. Value propositions are sent through tangible and intangible relations to users, customers, competences and network. Relations are connected to roles (Alee 2011) either played by customers, competences or/and network partners.

Very few BM frameworks include relations. Osterwalder (Osterwalder 2011) acknowledges customer relations as the business is related to customers but seems to forget relations to suppliers and other stakeholders in the BM. Only very few (Casadesus-Masanell 2010, Alee 2011) go into visualizing and documenting value transfers through relations in BM. We found that a BM without relations between the other BM dimensions will never be able to operate and become an “AS IS” BM.

4.7. Value formula dimension

Any business uses some kind of a formula to calculate the value it offers to the business, market, industry and/or the world. Very few BM frameworks comment on this formula and those who do are quiet blurred about the formulae.

The value formula is a formula that shows how the value and the cost are calculated by the business (Henry 1978, Kotler 1983, Porter 1985, Osterwalder 2002). The result of this calculation is a value formulae either expressed in money or/and other values. Henry talks about a profit maximization formula, Kotler talks about several pricing models, Porter discusses different competitive pricing formulas and Osterwalder (Osterwalder 2011) expressed this in his BM framework it as revenue and cost structure. Very few academia dealing with BM deal with how the business calculates the value they want to get out of the BM.

Several authors have documented that any business operates and is influenced by its business environment — external. In this paper, we leave the political, economic, social, technical, environmental, legal (PESTEL 2007) conditions and competitive (Porter 1980) contexts and environment dimensions for further comments although we acknowledge that the business environment is critical to the business.

The above mentioned seven dimensions are equivalent to the overall model we propose of how any business is constructed. The seven dimensions seen in Table 2 should be considered by any business that is interested in running its operations well. However, there is a difference between the way businesses want to run their operations — seven visionary dimensions of a business and how a business really runs its operations. By mapping empirical data from our business case studies to the seven dimensions, we found that most businesses have more than one business model. In other words, the businesses they described via the seven dimensions are different to how they actually run their business models. Some of these business models were close to their original description of the seven dimensions but others were different.

This places our attention to the fact that businesses could potentially have more business models and that there could exist a level beneath the level of the business's overall dimensions. We therefore address the importance of investigation of the business models and draw a distinction between a visionary model of a business and the models of business that are actually carried out (AS IS) and are intended to be carried out (TO BE) in the business.

Most academics working with BMs have until now covered the term BM at the business level and at the visionary level. Further, they cover it as just one BM for any business as seen in Table 1.

This observation together with inspiration from Abell's and Hamel's original definitions and framework of "The core Business" (Abell 1983), "The core competence" (Hamel 1995) made us adapt the definition of "the core business model" as the BM model at a business level and business visionary level, which states how businesses related to the seven dimensions may wish to run their businesses.

The core business model refers to: "How a business wants to construct and intends to operate its "main" and "essential" business related to the seven business dimensions — value proposition, user and/or customer groups, value chain [internal functions], competence, network, relations and value formula."

The business Model refers to: "How a certain business model in the business is constructed actually operates — "AS IS" BM — or is intended to be constructed — "TO BE" BM related to the seven dimensions — value proposition, user and/or customer Groups, value chain [internal functions], competence, network, relations and value formula"

In our research, we found that businesses do not stick strictly to their core business and how they want their Business Model to look like and be. They have in fact a variety and a mix of BMs with different value propositions, users and customers, value chains with different functions, competences, network, relations and value formulas. One set of dimensions do not fit all business models, markets, industries, worlds (Lindgren 2011). These mix of dimensions — which we classify as different business models exist and coexists within the core business — what we call BMs inside the business as illustrated in Figure 3 — but also exists and coexists outside the business. Individual BMs are not

necessarily aligned strictly to the core business model and the seven dimensions. All of them have their own specific seven dimensions.

Table 1 Business Model Definition focal points

Author's	BM as framework	BM at Business level	BM at Business Model level
Abell 1980		X	
Timmers (1998)	X		
Venkatraman and Henderson (1998)	X		
Selz (1999)		X?	
Stewart and Zhao, 2000		X	
Linder and Centrell (2000)		X	
Hamel (2000)	X		
Petrovic et al. (2001)		X?	
Weill and Vitale (2001)		X	
Magretta (2002)		X	
Amit and Zott(2002)	X		
Lai, Weill and Malone (2006)		X	
Chesbrough (2007)	X	X	
Skarzynski and Gibson (2008)		X	
Johnson, Hagemann and Christensen 2008	X		
Casadesus-Masanell and Ricarct (2010)		X	
Johnson (2010)		X	
Osterwalder and Pigneur (2010)		X	
Teece (2010)	X		
Zott		X	
Fielt (2011)		X	

Note: We had difficulties in placing X? precisely due to a kind of fuzziness about what they really mean and focus about. Therefore, their placement is our indication of where they should be.

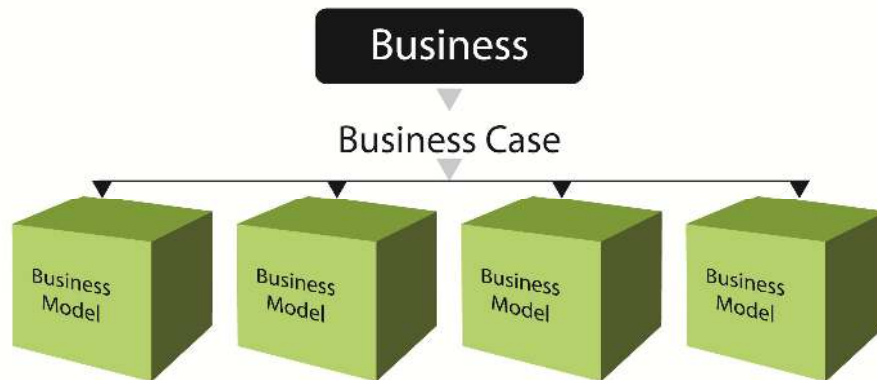


Figure 3 The Multi Business Model approach related to different Business cases.

Table 2 Generic dimensions of a BM

	Core questions related to BM
Core Building Block	Dimensions in the BM
Value Proposition/s (Products, Services and Processes) that the Business offers (Physical, Digital, Virtual)	What are our value propositions?
Customer/s and Users (Target users, Customers, Market Segments that the Business serves – Geographies, Physical, Digital, Virtual).	Who do we serve?
Value Chain [Internal] Configuration.(Physical, Digital, Virtual)	What value chain functions do we provide?
Competences (Assets, Processes and Activities) that translate Business's inputs into value for customers and/or users (outputs). (Physical, Digital, Virtual)	What are our competences?
Network - Network and Network partners (Strategic partners, Suppliers and others (Physical, Digital, Virtual)	What are our networks?
Relations(s) e.g. Physical, Digital and Virtual relations, Personal. (Physical, Digital, Virtual)	What are our relations?
Value Formula (Profit Formulae and other value formulae. (Physical, Digital, Virtual)	What are our value formulae?

We argue therefore that a business's different business models cannot be explained by just one business model — “the core business model” — but would with preference be better explained by different business models — however, still each would have seven generic dimensions, but with different characteristics. In our research, we only found Casadesus-Masanell (Casadesus-Masanell 2010) and to some extent Markides (Markides 2004) who indicates the existence of more BMs in a business.

As a consequence, we propose that a business can be said to have one or more BMs related to different business cases — the multi-business model approach (Lindgren 2011) — which are more, less or not aligned with the core business model. However, any of these BMs can be defined as related to a generic BM concept consisting of seven generic dimensions. Each of the seven dimensions addresses some core questions in relation to each individual BM's dimensions characteristics and logic.

5. THE BM COMPONENT LEVEL

Each BM dimension can be divided into components (Appendix 6 Table 7). We now exemplify the business model dimensions by explaining how each dimension in any business model can be different and how they can be characterized on a BM component level. The level of detail of each dimension is up to the individual business to decide. Business can “dive” as deep in detail as it wishes, however, our research shows that it must give meaning to the business to go in detail. Businesses must be able to get value out of the details, otherwise they will miss the overview and motivation of mapping their Business Models.

5.1. The Value proposition dimension component level — What value propositions do the BM provide? — (VP)

The definition of value (Alderson, 1957; Drucker, 1973; Albrecht, 1992; Anderson, 1982; Woodruff, 1997; Anderson, 1999; Doyle, 2000; Lindgreen 2005, Wouters, 2005, Chan 2005, Osterwalder, 2005 *et al.*) is manifold and its development since the 1950s during the “era of innovation” has been covered intensely in academia.



The Value chain dimension.

Value (Albrecht, 1992; Alderson, 1957; Anderson, 1982; Anderson and Narus, 1999; Doyle, 2000; Drucker, 1973; Woodruff, 1997; Lindgreen, 2005) is key in understanding the value of a product, service, process and relationship offered. However, value proposition varies related to different customers, because just as customers are different they are also satisfied by different values whether it is from products, services, a relationship or a value fulfillment delivered in a process by products and services (Lindgren 2011). “Managers today continuously ask themselves: How can we understand customer's value and how can we deliver “real” value to customers in a cost efficient and profitable way?” (Johnston 2008).

The customer's value equation is often very complex to understand in detail because it is not static but dynamic over time (Lindgreen 2005). Therefore, value proposition has to

be understood from the perspective of the customer and/or user it is delivered to, by the context it is delivered in, the time it is delivered and the place it is delivered.

Value can be said to be closely connected to the concept of “total value and cost to the customer” (Wouters, Andersson, and Wynstra, 2005). In this case, staying at the point of entry to a trade or a value proposition process is strongly related to the customer’s total perceived value and total perceived cost related to the products, services or process. This is why it is incredibly difficult as a business to measure, read the values and cost of a customer, and to decide the degree of attractiveness of a value — or if a value is judged high or low related to a trade or a process. In this paper, we focus on what the business — or business model believe it offers related to value — the business viewpoint (Lindgren 2011). However, we acknowledge there are other views of a value.

The solution to classifying value proposition taken by many businesses is to offer different value propositions to different customers, which argues that value proposition offered by a business is often different to each **customer, context, time and place**.

Payne and Holt (1999) outline four types of values related to values.

1. **Use Values** — the properties and qualities, which accomplish a use, work, or service for the customer
2. **Esteem Value** — the properties, features, or attractiveness, which causes a want to own the product and service for the customer
3. **Cost Value** — the sum of labor, materials, and various other cost required to produce it for the customer
4. **Exchange Value** — its properties or qualities, which enable exchanging it for something else that the customer wants

We found that this list of types of values had to be complemented by an overall dimension of work time vs. lifetime (Fogh Kirkeby, 2007). Time as the factor that is defining customers personal or business values of the e.g. trade or process is related to an overall lifetime value and describes the sum of actions taken in order to find work life-fulfilling and transcend oneself, a value often seen as the driver of projects, art etc (Tillich 1951, Austin 2005, Sandberg 2007 *et al.*).

Value also has to be measured **before, under and after** value exchange has taken place (Chan 2005). This means that a customer could trade or collaborate on the value from a product and service that comes out of the trade (Kotler 1984, Ziethaml, 1988; Doyle, 2000) but also from the value of the relationship (Reichheld, 1993; Lindgreen and Wynstra, 2005). The creation, capturing, delivering, receiving and consumption of value through a relationship (Brodie, Brookes and Coviello, 2000; Lindgreen, 2001; Danaher and Johnston, 2002; Lindgreen, Antiocho and Beverland, 2003, Lindgren 2012) is the value equation of an inter-organizational collaboration project — a network-based BM. This is one important value and also an attraction factor, which could be in this case, an innovation of a “TO BE” business model. The value of this can be other than money e.g. learning. Please see a list of non-monetary values in Appendix 2.

This is in line with research claiming that the value of the relationship, activity links, resource ties, and actor’s bonds (Axelsson and Easton, 1992; Håkansson, 1982; Håkansson and Snehota, 1995; Ford, 2001; Ford et al., 2002; Ford et al., 2003) can be even more important than the value of the product or service. The value of the relationship is both an input but also an output of the business model innovation process, which supports the argument that value is not static but dynamic.

As values are created, captured, delivered, received and consumed in a value process, they are continuously undergoing change throughout the business model innovation process or the life time of values. Values of relationship can be related directly (e.g. profit, volume-, safeguard-functions) both also indirectly (e.g. innovation-, market-, scout-, access-functions). The value functions (Walter, 2001) can further be of a low and/or high performing character (Lindgreen and Wynstra, 2005) which is often up to the customer's judgment and to influence the degree of this value. Chan and Maubourgne (Chan 2005) express this in their strategic value map Appendix 3. However, their value map is just seen from the business view point and not from the customers or other view points (Lindgren 2011).

The value of a customer should also be understood as perceived value — benefits and cost (Woodroff, 1997; Walter, 2001; Lindgren, 2002), which means that the real value of a product, service and/or a process can in some cases be neglected in advance to a higher or lower perceived value of a product, service or a process. Furthermore, perceived value should not just be related only to the individual customer but also to other individuals as other customers, users (von Hippel 2005), competences (technology, humans, organizational systems and culture), network (suppliers, other network) in the business model interpretation of the product, service and/or process. (Blois, 2004) Therefore, it is the user's, customer's, competencies, network's interpretation of "value" that is important and not just what the business and its stakeholders (investors, the market, the business, the innovation leader) think ought to be or are the values — that is the real value proposition of the BM.

It is therefore important when analyzing and understanding a product, service and/or process value, to analyze all stakeholders and both values and perceived values. Furthermore, it is important to analyze value and perceived value over time, during the trade or inter-organizational collaborative process, as both values and perceived value are dynamic and will therefore by definition always change throughout the entire value process and thereby over time. Today, no business model framework has managed to and is able to cover and capture value change over time.

Values can be tangible and/or intangible. Tangible is something you can see, touch or feel and others can get a full view of these items. Intangible is "something" you cannot see, touch or feel physically.

We make a distinction between the tangible and intangible values and associated value objects: tangibles and intangibles values. Tangible value objects have often a direct financial value, underpinned by an accepted financial marketplace for realizing the value.

A view to tangible and intangible value view is taken by Verna Allee [All 2008] who defines tangible values as tangible deliverables to include anything that is contracted, mandated or expected by the recipient as part of the delivery of a product, service or/and a process that directly generates revenue. Intangible value objects, as proposed by Allee, could be considered in three main groups:

- Intangibles where a financial market may be established but where the stability and absolute nature of the value may be questionable (such as intellectual property).
- Intangibles where a measure is established with a wide acceptance of the measurement approach (carbon footprint).

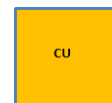
- Intangibles where only a specific context is applicable with values very much related to that context.

Li draws a comparison between tangibles and intangibles in relation to markets and contexts (Li 2012). This enables us to include the operation of social businesses/exchanges within this definition of tangibles and intangibles.

In summary, any business model may offer a value proposition which can be offered as tangible and/or intangible value. Value proposition can be products, services and/or processes of product and services. Value propositions can be values of relations.

5.2. Customers and Users dimension component level — Who does the BM serve? (CU)

Any business model that we researched talks about business models having customers. However, we found that many BMs do not have customers that pay for BM's value proposition, but are constructed around users, which provide the foundation for other BMs with customers.



The Customer and User dimension

Facebook, Skype, Linkin, Twitter and Google are examples of such business models.

Our research showed that BMs built upon users, when growing big in numbers of users, can attract and activate customers willing to buy — or pay for value propositions in other BMs. Either users start to pay for better performance, advanced use, deeper content e.g. or other customers buy e.g. promotion because there are so many users in the BM. In these cases, the customers pay for other or different value propositions — or a different BM — as the users. Stock buyers of Facebook business could be an example. The customers, however, can also at the same time be users of the value offering in the user-based BM. Stock buyers of Facebook business are probably also Facebook users. Thereby, customers can play different roles in a BM and in different BM's.

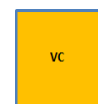
This is also one of the arguments why we point to the existence of more BMs (Lindgren 2012, Lindgren 2013) in any business where our research shows that BMs are often interrelated and add value and influence to each other.

We therefore propose to distinguish between users and customers by defining users as not paying for the value proposition (Kotler 1983, Von Hippel 2005) while customers pay for the value proposition (Kotler 1983).

Users can, however, “pay” with other value, other value transfers and thereby contribute to development of very important values for other business models. These values could be learning for future BMI, development of critical user mass that would be attractive for other BMs, change of general market context and direction. Needless to say, there can be many other valuable contributions from user-based BMs to customer-based BMs (Appendix 3).

5.3. Value Chain functions [Internal] dimension component level — What value chain functions do the BM have? — (VC)

Any business model must carry out certain activities to produce the value proposition to the users and/or customers. A list of these activities was proposed by Michael Porter in his value chain framework (Porter 1985). Porter called



The Value Chain function Dimension

for these activities and proposed some primary activities and some secondary activities of a value chain. A value chain was proposed by Porter to include one or all of these activities, however, if some activities were missing and not carried out, our research shows that this can stop the BM's operations or that the BM will never come to operate in the business and the market.

Porter's Value Chain framework was related to an operating BM. However, when businesses commence to create a "TO BE" BM there are really no active activities, just wish and expectation of value chain functions the BM should carry out. Further, when we observe an operating business at a certain moment — in this case, we freeze the picture of a specific BM — we do not see "running" activities but just functions that are carried out (Appendix 4). Value chain functions in our BM framework represent the value chain functions that have to be carried out or are being carried out within the BM. We acknowledge that there are value chain functions outside the BM but in this paper we only focus on the internal value Chain functions of the BM.

5.4. Competence dimension component level — What are the BM's competences? — (C)

Any business model relies on and uses competences, either from the focal business, from network partners or even from customers and users to carry out the value chain functions to create, capture, deliver, receive and consume the value propositions.



According to Prahalad and The Competence dimension Hammel, (Prahalad 1990) competences can be divided to four main categories according to Prahalad and Hammel Technologies, HR, Organizational Structure and culture.

Technologies according to (Sanchez 1996, 2000, 2001) we divided into

1. Product- and service-technologies
2. Production technology — both "Product- and Service-production technologies"
3. Process technology — process technologies that run and steer the production technologies so that the product and service technologies can be created, captured, delivered, received and consumed.

Each BM has a specific mix, integration and use of product- and service- technologies, production technologies and process technologies. Some mix, integration and use of technologies are so unique that the competence can be a core competence (Prahalad and Hammel).

Human Resources are the people — either white collar or blue collar (Peters xxxx) that the BM can use to carry out the Value Chain functions. The human resource, the mix and the use of human resource can also be so unique that human resource too is rendered as a core competence.

Organizational system is the system that the business models use to organize the use of technologies and human resource to carry out the Value Chain functions. The organizational system can also be so unique that the organizational system is a core competence.

Culture is the “soft” part of the competence dimension. We claim that any BM has a specific culture. The culture can be adapted one to one from the business or other BMs but can also be incremental even radically different to these.

5.5. Network — What are the BM’s networks?

Any business model is a network-based BM. No BM is a lonely island — at least not for very long time. Why? — because if a BM does not receive value from outside it will slowly shrink and vanish. If it does not offer a value proposition of any kind it will not be able to receive value in a long time perspective. The BM network hereby becomes vital to any BM — a BM is its network.

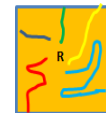


The Network dimension

Networks can be physical networks (Håkanson 1990), digital networks (Choi 2003) or/and virtual networks (Coldmann and Price 2005, Vervest 2005) that the BMs use.

5.6. Relations dimension component level — What are the BM’s relations? — (R)

Any Business Model relies on relations. In our research, we found four sets of relations that are of importance to BMs (Appendix 4) and should be attended to by business managers as shown in Figure 4.



The Relation dimension

1. The “**inside BM inside business**” area relations refer to business model relations transferring values and securing communications inside the BM.
2. The “**inside business outside BM**” area refers to relations between different BMs inside the business.
3. The “**inside BM outside business**” refers to relations between BMs outside of the business.
4. The “**Outside BM Outside business**” refers to relations and relation area where the BM and business do not share a relation.

Value and values of a BM can be seen in a broader perspective as each partner’s BM’s relation to users, customers, competences, networks in the inter-organizational network of relations to “AS IS” and “TO BE” BM’s. Why? Because value and cost are strongly interrelated with relationships (Blois, 2004), and attributes related to the relationship between the partners BMs in e.g. a simple trade “AS IS” BM or an BM innovation project “TO BE” BM where goods and services are not necessarily defined. Needless to say, these relations influence each other and are interrelated.

As was seen earlier, value equation is not only related to products, services and processes but is also strongly connected to the relations and thereby a result of the relation between BMs in either a trade or an innovation project. Value equation can be related to irrespective of whether the BMs are related or not. In this paper, we only cover the internal relations — the “In In” relations — in a BM.

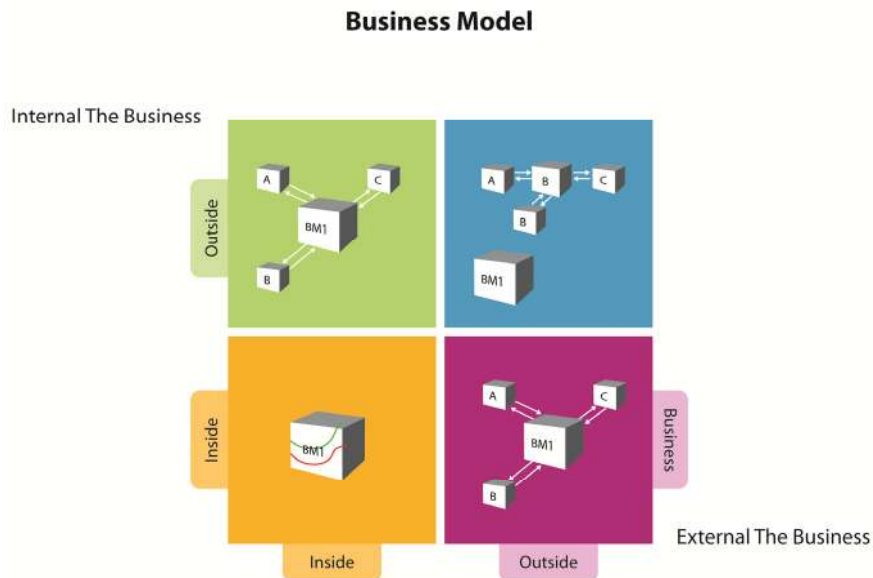


Figure 4 The Relations areas related to a BM – The Relation Axiom Lindgren and Horn Rasmussen 2012.

Relations, activity links, resource ties, and actor's bonds (Axelsson and Easton, 1992; Håkansson, 1982; Håkansson and Snehota, 1995; Day 2000; Ford, 2001; Ford *et al.*, 2002; Ford *et al.*, 2003) are all tools used to describe and map relations.

The creation, capturing, delivering, receiving and consumption of value is enabled through relations (Brodie, Brookes and Coviello, 2000; Lindgreen, 2001; Danaher and Johnston, 2002; Lindgreen, Antioco and Beverland, 2003, Lindgren 2012). Relations connect the different BM dimensions' components and enable the creation, capturing, delivering, receiving and consumption process of value. However, if any BM is not able or willing to send and receive the value through the relations, then the relation has no value and no task.

5.7. Value formula dimension component level — What are the BM's value formulae? — (VF)

Any business model will have one or more value formulae, which can be expressed in either a monetary and/or in a nonmonetary value formulae. The term profit formula as a dimension in a BM that we found through our research has to be changed to a dimension called the value formula dimension to cover all BMs. We found that the term profit formula



The Value formula dimension

is too narrow a terminology to express the formula by which any BM calculates the value of a BM. Our research showed that many businesses and BMs are not focused, or are not exclusively focused on profit but instead on other value formulae. They "calculate" on other value formulae and to get a full understanding of why business models exist and are

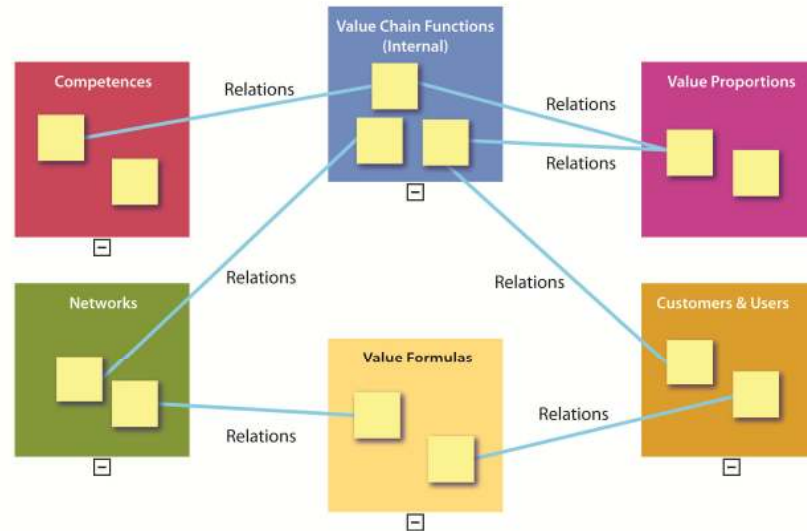


Figure 5 The seven dimensions of the Business Model cube in a 2D presentation.

innovated it is necessary to include other values. We therefore propose profit formula as one of many value formulae that can be the “calculated” output of a BM. However, we claim that any BM has one or more calculated value formulae — monetary and/or non-monetary. A BM can have more than one value formulae.

Having verified academically that the seven dimensions of the BM exists, it enables us to complete the concept of the BM Cube. In a 2D picture and with the seven dimensions spread out flat it would look like Figure 5.

However, we discovered that the seven dimensions form a BM Cube with the “IN” relations inside the Cube as shown in a sketch model in Figure 6.

The 2D version is very helpful when working on a BM dimension level and the 3D version are helpful when working on a BM, BM portfolio, business and BM ecosystem level. Both presentations are helpful when working on BMI, see Table 3.

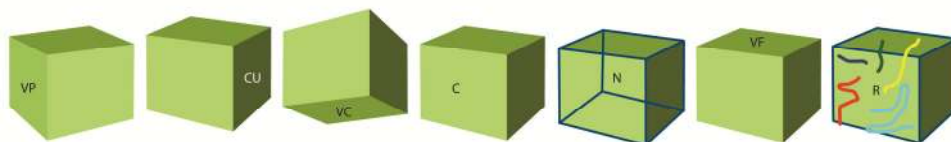


Figure 6 The seven dimensions of the Business Model cube presentation.

Table 3 An example of a portfolio of BM's in the KB use case (Lindgren 2013)



6. DISCUSSION

Today, most academia's and practitioners consider the BM as measurable, objective and one of a kind. Although there are many different definitions (Taran 2011) and types of business models (e.g., open and closed business models (Chesbrough 2007, Lindgren 2011), free business models (Anderson 2009), internet-based business models (Zott 2002), most define business model at a business level and at a core business level (Abell 1983). We propose that there is a need for a distinction between levels of business model focus as proposed in tabel 4. The business level — the core business model and the business models existing under the “umbrella” of the core business model. This is to prevent fuzziness and support discussion and further development of the BM theory.

Tabel 4 Levels of Business Model

Levels of Business Model	Characteristics of the BM level
BM component The Smallest part of a BM dimension	Value proposition components Value attitudes, attributes Customer and User customer and User roles Value chain functions Primary functions: Inbound logistics, operation, out bound logistics, Marketing and Sales, Service Support Functions: Procurement, Human Resource Management, Administration, finance infrastructure, Business Model Innovation Competence Product-, Production-, and Process Technologies HR – employees/people Organizational System Culture Network Physical, digital and virtual network Relations Value formulae Links, connectors
BM dimension	Value proposition Customer and or User Value Chain Functions [Internal] Competence Network Relations Value formulae
BM	BM Cube with the seven dimensions — “TO BE” or “AS IS” BM Cube — 2D and 3D presentation
BM portfolio	Group of BM Cubes that are interrelated
Business	The core Business level with seven dimensions
Business Model ecosystem	A BM ecosystem where businesses BM are bid.

Some BMs together can form a group of BM that is interrelated — what we call a portfolio(s) of BMs in the business (Lindgren 2011). These BMs form a group of BMs that have similarities due to e.g. the same customer focus, use of the same value chain, use of the same network. Often the BM portfolio's BMs are interdependent. As earlier mentioned, some BMs attract users who attract customers to other BMs in the BM portfolio. An example of this is shown by the case study of KB (Lindgren 2012).

Further, we consider every business to be part of one or more business model ecosystems. BM's ecosystem is where the business BMs operate and “exchange” its value proposition e.g. manure BM Ecosystem in the Vlastuin case, healthcare sector in the HSJD case (Appendix 4).

We propose that business models and BMI should be viewed on different levels as shown in Table 4.

Businesses are doing BMI at different business model levels. The BM ecosystem level is considered as being the most complex level of BMI. The BM Cube can be considered valuable at all levels. BM Cube can be useful for BMs “on the way to the market” (“TO BE” BM's) and on BMs “already in the market” (“AS IS” BM's). It is possible to “innovate”, “measure”, “test” and “see” when any “BM cube”. It is possible to see if the BM is finished and how and why it is functioning or not functioning. It is possible to see the BM cube and its dimensions and components at different levels.

Summing up from the above mentioned, we propose that any BM cube consists of seven dimensions — six sides and the BM relations in the BM — inside the BM cube that binds all other dimensions and components together and enables creation, capturing, delivering, receiving and consumption of values. We illustrate the BM Cube in Figure 7.

7. BUSINESS CASES

In order to approach the combination of business and BMs to define the BM cube, two case studies are presented. The first case is based on the Dutch business Vlastuin which is implementing several new “TO BE” BM's in order to reinforce its business and already has several BMs operating “AS IS” BM's in order to sustain the business. The second case is concerned with an already functioning hospital HSJD which introduced a whole range of “TO BE” BM's in relation to the hospitals business.

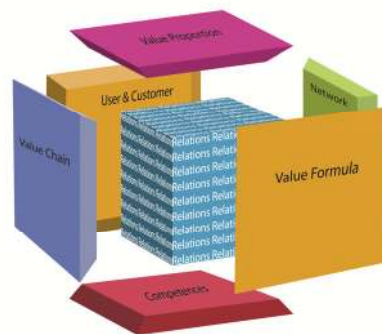


Figure 7 The BM cube.



Figure 8 Vlastuin's business evolvement.

Vlastuin (Appendix 4)

Vlastuin started its operations in 1959 and is located in Netherlands. Vlastuin employs around 150 people and had a turnover of 27 million EUR in 2011. During more than 50 years of presence, Vlastuin has added more BMs to its business and thereby slowly increased its core business. It started off by installing and servicing furnaces and boilers, gradually moved to manufacturing to later on adding assembling of cranes and parts to the business. A graphical representation of Vlastuin business evolvement can be seen in Figure 8.

In Appendix 4, a detailed description and analysis of the case is presented.

HSJD Hospital (Appendix 4)

Hospital Sant Joan De Dieu (HSJD) belongs to the Hospital Order of Saint John of God and is a private, non-profit hospital. The order is represented in more than 50 countries and has almost 300 healthcare centers worldwide. HSJD is located in Barcelona, Spain, and is a children and maternity care center. HSJD is a university hospital connected to the University of Barcelona and is also associated with the Hospital Clinic of Barcelona, which helps the hospital to provide top-level technological and human care. HSJD is 95 % financed by the Catalanian public system and the remaining 5% comes from private investments. The primary goal of HSJD is to encourage and educate a healthy lifestyle with good nutrition, proper sleep, hygiene and exercise.

In Appendix 4, a detailed description and analysis of the case is presented.

8. CONCLUSION

The BM CUBE concept was evolved through our research on top of the increasing business model literature and practice. The BM Cube concept came out of the research and test in the Neffics FP 7 EU project. Today, BM is argued to be a general model for how any business should run its business. Conversely, this paper argues that no business has

one Business Model — one model on which they run their business — but businesses have more BMs to conduct businesses. The paper addresses the concern with the difference between the level of a business — the core business — and the level of its business models.

The research addresses further the gap in research and strong demand to find a generic definition and language of a BM. The significance and importance of this work is related to the huge unexplored possibilities that business model innovation offers, when we fully understand the levels, dimensions and components of the business models thoroughly and are able to communicate, work and innovate with business models at these levels. In this context, we proposed that any BM is related to seven dimensions — value proposition, user and/or customer, value chain functions [internal], competence, network, relations, value formulae. The paper also proposes six different levels of a BM from the most detailed level — component to the dimension, BM, BM portfolio, business and business model ecosystem layer. The Vlastuin and HSJD case studies showed the BM Cube framework in practice and verified that the seven dimensions really exist in any BM that we studied in our research.

Conceptually, the BM cube was formed out of the seven dimensions and could be useful both in a 3D and a 2D version. The paper shows how both versions can be useful on different levels.

9. FUTURE EXPECTED RESULTS/CONTRIBUTION

The study has enlightened a strong demand for testing the BM cube concept in a larger business use case scale and sample. The next step has been initiated a bigger quantitative and qualitative empirical-based research to clarify more details of the BM cube. The tests are intended to be a part of a larger EU and US funded research project together with establishing several BM Cube lab's.

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APPENDIX 1 LIST OF BUSINESSES TESTED WITH THE BM CUBE FRAMEWORK AND THE 7 DIMENSIONS

Primary cases in this paper - Vlastuin, HSJD

Secondary cases for this paper - AH Industries, EV Metalværk A/S, Human Company, Margit, Skive El Service, X-FLEX, GP Rådgivning, Subzidizer, Censec

APPENDIX 2 BUSINESS MODEL COMPONENTS AND DIMENSIONS

Table 5 Business Model Components and Dimensions

Source	Specific dimensions and components	Number	Empirical support Y/N	E-commerce /general /Other	Nature of data
Abell 1980	Customer function, Customer group, customer technology	3	Y	G	N
Porter 1985	Suppliers, Buyers, Competitors, New entrance, Substitutes	5	Y	G	
Porter (1995)	Value Chain activities – primary and support	9	Y	G	
Horowitz (1996)	Price, product, distribution, organizational, characteristics, and technology	5	G	N	
Viscio and Pasternak (1996)	Global Core, Governance, business units, services and linkages	5	G	N	
Timmers (1998)	Product, Service, information flow architecture, business actors and roles, actor benefits, revenue sources and marketing strategy	5	E	Y	Detail Case Studies
Goldmann , Nagel and Price (1998)	Network, competitors,	2	Y	O	
Sanchez (1999)	Product, Process, Technology, Market, Organizations, Knowledge Architecture	6	Y	G	
Markides (1999)	Product innovation, customer relationship, infrastructure management, and financial aspects	4	G	N	
Donath (1999)	Customer understanding, marketing tactics, corporate governance, and intranet/extranet capabilities	5	E	N	

Source	Specific dimensions and components	Number	Empirical support Y/N	E-commerce /general /Other	Nature of data
Chesbrough and Rosenbaum (2000)	Value proposition, target markets, internal value chain structure, cost structure and profit model, value network and competitive strategy	6	G	Y	35 case studies
Gordijn et al. (2001)	Actors, market segments, value offering, value activity, stakeholder network, value interface, value ports and value exchanges	8	E	N	
Linder and Cantrell (2001)	Pricing model, revenue model, channel model, commerce process model, Internet-enabled commerce relationship, organizational form and value proposition	8	G	Y	70 interviews with CEO's
Hamel (2001)	Core, strategic resources, value network and customer interface	4	G	N	Consulting Clients
Petrovic et al. (2001)	Value model, resource model, production model, customer relations model, capital model, and market model	7	E	N	
Dubosson-Torbay et al. (2001)	Products, customer relationship, infrastructure and network of partners, and financial aspects,	4	E	Y	Detail Case studies
Afuah and Tucci (2001)	Customer value, scope, price, revenue, connected activities, implementation, capabilities, and sustainability	8	E	N	
Weill and Vitale (2001)	Strategic objective, value proposition, revenue sources, success factors, channels, core competencies, customer segments, and IT infrastructures	8	E	Y	Survey research
Applegate (2001)	Concept, capabilities and value	3	G	N	
Amit and Zott (2001)	Transaction content, transaction structure, and transaction governance	4	E	Y	59
Alt and Zimmermann (2001)	Mission, structure, processes, revenues, legalities, and technology	6	E	N	Literature Synthesis
Rayport and Jaworski (2001)	Value cluster, market space offering, resource system, and financial model	4	E	Y	100 cases

Source	Specific dimensions and components	Number	Empirical support Y/N	E-commerce /general /Other	Nature of data
Betz (2002)	Resources, sales, profits, and capital	4	G	N	
Gartner (2003)	Market offering, competencies, core technology investments and bottom line	4	E	N	Consulting Clients
Von Hippel (2005)	Users and business	2	Y	O	
Vervest (2005)	Network	1	Y	O	
Prahalad & Hammel (2005)	Competences	1	Y	O	
Lecocq, Demil and Warnier (2006)	Resources and Competences, Value proposition, Organizations – internal and external, Revenues, costs, Margins	5	Y	G	Use case study
Brousseau & Penard, (2006)	Consumer, Values - attributes - tangible goods or information services or their combination, alternative (organizational) processes, assembly of functionalities, , capabilities, profit	6		E	Use case study
Seelos & Mair, (2007)	Customers, Resources and capabilities, supply chain, partnerships, profit, important social development Objectives,	6	Y	O	Use case study of BOP market
Chesbrough 2008	Value proposition,	6	Y	G	Use case studies
Johnson et al (2008)	Value, Customers, Value chain - operation, Profit	4	N	G	
Masanell, R. C., & Ricart, J. E. (2009)	an objective (real) entity: choices made in every organization with consequences: particular set of choices an organization makes about policies, assets and governance - and their associated consequences - determine 'the logic of the firm, the way it operates and how it creates value for its stakeholders'.	5	Y	G	Case studies

Source	Specific dimensions and components	Number	Empirical support Y/N	E-commerce /general /Other	Nature of data
Lindgren (2010)	Value propositions, Customers/users, Value Chain [Internal], Competences, Networks, Relations, Profit formular	7	Y	G	
Teece (2010)	market segments, benefits (product/service) customer, features/technologies, assembling and delivery, value offering, business's revenue and cost structures, competitive advantage	9		G	
Casadesus-Masanell, Ramon and Joan Enric Ricart (2010)	Value, User, operation, relations - "logic of operation (the way the different components are assembled and relate to one another), and operates in a particular way to create value for its user".	4	Y	G	
Zott, C., Amit, R., and Massa, L. 2010	Value (Value stream, Value propositions, Customer value) activities, Financial aspects (revenue streams, cost structures, revenue model), exchange partners (delivery channels, network of relations, network relations, logistical streams, infrastructure)	14	Y	G	Literature study
Fielt, (2011)	Value, customer, value chain activity, capability, network, profit	6	Y	G	
Taran et all 2011	Value propositions, User and Customers, Value Chain [Internal], Competences, Network, Relations(s), Profit formular	7	Y	G	
Porter 2012	Network, Values, Customers, Supplier		Y	G	
Lindgren and Horn Rasmusse n	Value proposition, User and Customer, Value Chain[internal], Competences, Networks, Relations, Value formula	7	Y	E/G/O	46 use cases

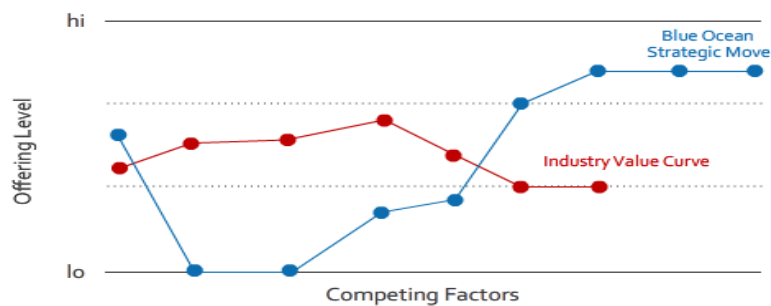
Source	Specific dimensions and components	Number	Empirical support Y/N	E-commerce /general /Other	Nature of data
Chesbrough et al 2013	Value Proposition, market segments, value chain and competences, complementary assets, business revenue - cost and profit, competitive strategy	6	Y	G	3 use cases

Source: Specific dimensions and components Number Empirical support Y/N Nature of data

APPENDIX 3 MONETARY AND NON MONETARY BUSINESS VALUES

Please see Neffics D 3.2. www.Neffics.eu

APPENDIX 4 STRATEGIC VALUE MAP BLUE OCEAN



The strategy canvas is the central diagnostic and action framework for building a compelling blue ocean strategy. The horizontal axis captures the range of factors that the industry competes on and invests in, and the vertical axis captures the offering level that buyers receive across all these key competing factors.

APPENDIX 5 VLASTUIN USE CASE



Vlastuin is a business started in 1959 and is located in Netherlands. Vlastuin employs around 150 people and had a turnover of 27 million EUR in 2011. During more than 50 years of presence, Vlastuin has added more BMs to its business and thereby slowly

increased its core business. It started off by installing and servicing furnaces and boilers, gradually developed manufacturing and later on added assembling of cranes and parts to the business. A graphical representation of Vlastuin business evolvement can be seen in Figure 8.

Vlastuin's crane business case

The first business case provided by Vlastuin is production of the crane booms. This business started due to the evolvement of the crane producers (Customers) outsourcing crane boom production (Value chain functions). A crane boom is the extendable and retraceable arm of the crane (product) which lifts the loads. See Figure 9.

Vlastuin as a manufacturer of D-Tec container trailers had **competences** of accurate bending and high quality welding (**Production- and process technology** and **HR**) of large heavy pieces of steel, which was exactly what crane producers were looking for. Currently, Vlastuin is a provider of the crane booms (**Value proposition**) to crane manufacturers throughout Europe. The Truck crane BM involves three major stakeholders: Truck crane producers (**Customer**), Crane boom providers (**Network partner**) and Metal sheet suppliers (**Network Partner**). Each of these will be shortly introduced presenting their roles and interconnections between each other.

Truck crane producer business case (OEM customer)

Truck crane producer, as the name implies, produces the cranes and mounts them on the truck. Often they outsource part manufacturing and focus more on final product. Part of the outsourced manufacturing is boom production in which Vlastuin specializes. The truck crane producer has extensive knowledge (Competence) on crane boom manufacturing since it was originally manufactured inhouse. Therefore, they demand same or even higher quality for the outsourced parts (**Value proposition**). Furthermore, in this specific crane boom part provided by Vlastuin, the truck crane producer also has a contract with a metal sheet supplier to ensure that the raw material meets the specifications for manufacturing (**Value proposition**).

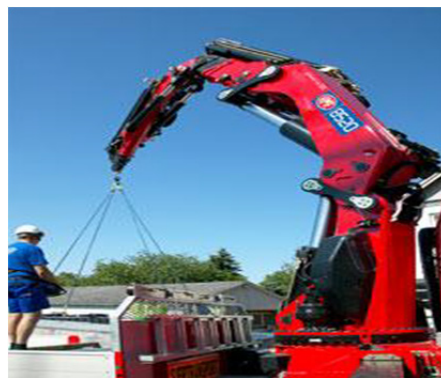


Figure 9 An example of a Vlastuin Crane boom on trucks.

Crane boom provider (Vlastuin)

Crane boom provider, or in this case Vlastuin, manufactures (VC) crane boom parts based on customer specifications (VP). This process starts with the creation of the production drawings and product quality plan (VP) by a specialized engineer. Afterwards, special sheet metal is ordered from the supplier (VC). After raw materials are received the production processes launches (VC, C). Three major steps in production are laser cutting, sheet bending and certified welding (VC). Laser cutting involves cutting out various boom components of the sheet metal plates using laser. This provides high quality cutting edges and very precise component dimensions. Sheet bending is where high dimension heavy components are bent at right angles according to predefined sequences. In order to obtain exact bend angles, very precise laser angle measurements are performed during the process. Certified welding is performed with high-end welding equipment by certified welders (C) due to safety regulations of truck cranes. Here, the separate boom components are welded together in a pre-set welding order. This is to avoid crane boom getting twisted due to the heat transfer and thick metal, causing problems later in crane boom operation. After all the production processes are carried out and quality is insured, separate welding assemblies are grouped together and sent to the customer production line (VC).

Below, we have summarized the value chain function and process that Vlastuin addresses. It also indicates some of the tangible and intangible value propositions that Vlastuin takes care of together with some of the competences embedded in Vlastuin's BM. Further, it gives an overall view of the **relations** inside the specific BM.

Sheet metal provider

Specifications meeting sheet metal is supplied by a sheet metal provider after the truck crane provider sends out a stock release order assigning certain amount of stock to the crane boom provider. Due to its long manufacturing processes these are manufactured in batches and kept in stock. After receiving an order the sheet metal is transported to the crane boom provider.

For an overall graphical overview of the Vlastuin crane business case, we have drawn up three BMs in action with Vlastuin BM at the center in Figure 10.

One building block is not shown. Our comments regarding the value formula of the crane boom provider Vlastuin is confidential information. In the next case we will, however, be able to go a little deeper into another of Vlastuin's BMs.

Business case 2: Vlastuin's paperless manure transportation business case

Vlastuin is also in the manure transportation data administration business. In the Netherlands, it is by law decided that in order to transport manure authorities have to be notified at the start and at the end of the transportation with manure samples. Due to these regulations, Vlastuin started providing AGR units (Dutch for Automatic Data Registration) (VP). This unit sends data (VP, VC, C, R) to the Vlastuin server where it is filtered and forwarded to the authorities (Users). By doing this, it dramatically decreases the processing time and paper work needed for manure transportation (VP) for the user and

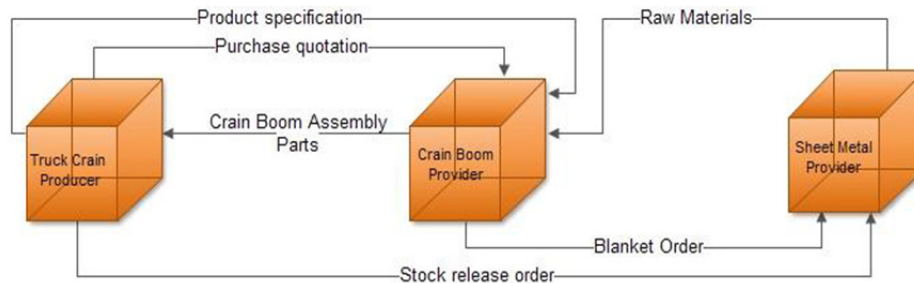


Figure 10 Vlastuin Cranes Business Case Overview.

customers (CU). There are eight significant stakeholders in this business case, which will be introduced next.

Manure producer

A manure producer is usually a livestock farmer (CU's customer) who has excessive amount of manure. Farmers usually have a contract with the manure transporter (manure transporter will be explained in more detail later on) (CU) which means that all the work that comes with manure transportation is done by the manure transporter. Some examples could be that the manure transporter is responsible for finding manure consumers (CU's customer), or the manure transporter is responsible for all the paper work around the manure transportation (Customers' value proposition demand). The cost associated with manure transportation is deducted from manure producers' payment for manure. The manure producer gets a digital version of the paperwork from the manure transporter.

Manure consumer

The manure consumer (CU's customer) is usually the farmer who needs the manure as fertilizer for his fields (CU's customers' (upstream) value proposition requirement). The manure consumer has a contract with the manure transporter which includes all the work associated with manure transportation (CU's customers' (downstream) value proposition). Manure consumers get the invoice for manure together with the digital copy of the paperwork.

Manure transporter

Manure transporter is the direct customer (CU) of Vlastuin. This usually is the transportation company which transports manure from manure producer to manure consumer. Manure transporter has contract with both manure producer and consumer, and dispatches tank trailers to manure producers upon request. During loading of manure to the tank, samples of the manure are packaged into the sealed bags, as can be seen in Figure 11.



Figure 11 Manure sample bag.

These samples are fitted with barcodes (added value proposition) which are scanned and sent to the authorities together with other required information (**VP, VC, C, R**). This is automatically performed by the AGR — unit via an infrastructure provider service (internal business network partner (**N**) value proposition). After receiving confirmation from the authorities (**N**) about successful transmission, the manure is transported to the manure consumer (**CU's** customer). The manure consumer is automatically determined by GPS data (added value proposition) combined with manure administration data (added value proposition) thus identifying the closest manure consumer location. Before transportation, the consumer will need to confirm if he wants to receive the manure.

Infrastructure provider

The manure infrastructure provider, in this case the ICT department in Vlastuin (**C**), is providing the platform for data transferring and registration (**VP**). Vlastuin has a server stack which acts as a communication center for manure transportation (**C**). The AGR unit in Figure 12 sends information to the servers with GPS coordinates and scanned sample bag barcodes together with other information (**VC,C,R**). The servers (Network partners (digital) internal Vlastuin) immediately filter out only mandatory information and send this data (value chain functions at internal BM in Vlastuin) to authorities (**CU**). Authorities (**N**) send back a notification to the servers informing if the transaction was successful (external network partners value proposition and value chain functions in BM) where it is forwarded to the AGR unit allowing further processes for manure transportation (**VP**). In the case where the transaction is not confirmed (which is very infrequent) the problem is addressed manually by calling the authorities and further addressing the problem.

The manure administrator is also connected to the server, which allows access to the laboratory results even though the laboratory (external network partner in the BM) is not connected to the servers directly. All this data can be accessed through the AGR website where the manure transporter provides additional functionalities such as Track-n-Trace (transport movement insights) and consumer specific accounting data. The AGR unit is sold with attached service contact including mobile data connection necessary for communication with the data server together with firmware updates of the unit, and



Figure 12 AGR Unit.

software updates for AGR web site. In addition to the AGR unit, Vlastuin also provides D-TEC sampling units which takes the manure samples and packages them to the plastic bags as seen in Figure 11. This unit also comes with a servicing contract together with consumables and spare parts.

Manure Administrator

The Manure Administrator (network partner) provides administrative services (network partners' value proposition and value chain function) to meet the requirements of the fertilizer law. One of the examples could be the application of manure accounting ID from the ministry (value proposition to user demands). The Manure Administrator also feeds data from laboratory results of the manure samples. The Manure Administrator acts as a middle man between authorities and manure transporter, therefore, only the final data is uploaded to the authorities.

Laboratory

The Laboratory (network partner) receives the manure samples for assessment of its value. It identifies the manure producer or receiver by the barcode, and returns their findings to authorities and the Manure Administrator.

Authorities

In this particular case, the authority is the Ministry of Agriculture and Nature management and Fisheries (Users) in Netherlands. They receive the manure transporting data combined with the laboratory results (Combined value proposition).

Regulator

This is the AID (Dutch for General Inspection Service) (User) in the Netherlands. They ensure that all requirements are met by all the participating parties in the manure transporting process. This includes checking farmers, manure transporter infrastructure provider, manure administrator and even the authorities themselves. If any of the requirements are violated, the violating business (or private party) is imposed a fine (VP by user).

Figure 13 illustrates how, on a theoretical perspective, at least two “AS IS” BMs can be seen in this particular Manure transportation business case. Vlastuin not only has two simultaneously operational business cases, but looking into manure transportation with just some simple business modeling details shows that the same business case — the Manure transportation Business case has at least two “AS IS” BMs. An overall graphical overview can be found in the following illustrations of manure loading, transportation and unloading business case.

To clarify further the processes in the manure transportation and different stakeholders’ process flow chart, readers are advised to see Figure 14, 15 and 16 documentation. In order to more easily understand the flow charts, the transportation processes have been split into loading, transportation and unloading.

As can be seen in this very fragmented and small part of the Vlastuin’s business, there are many “AS IS” BMs in operation. It can also be seen that many business partners — network partners — in the overview are shown each with their “AS IS” BMs.

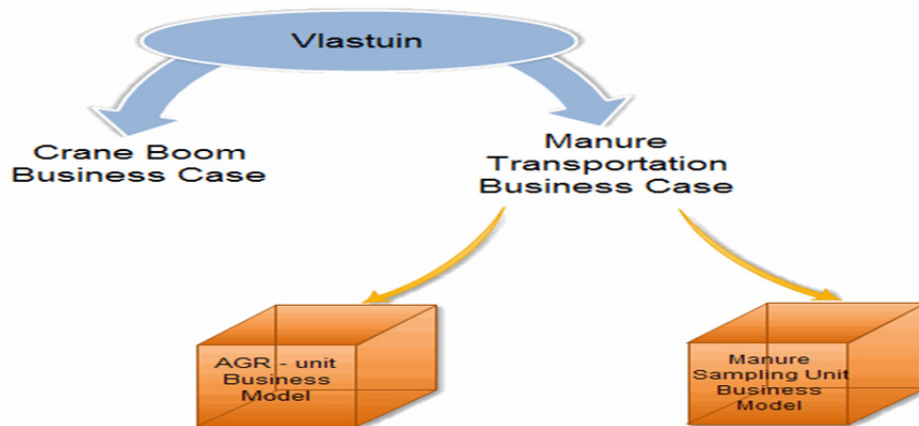


Figure 13 Vlastuin Business Cases and Business Models.

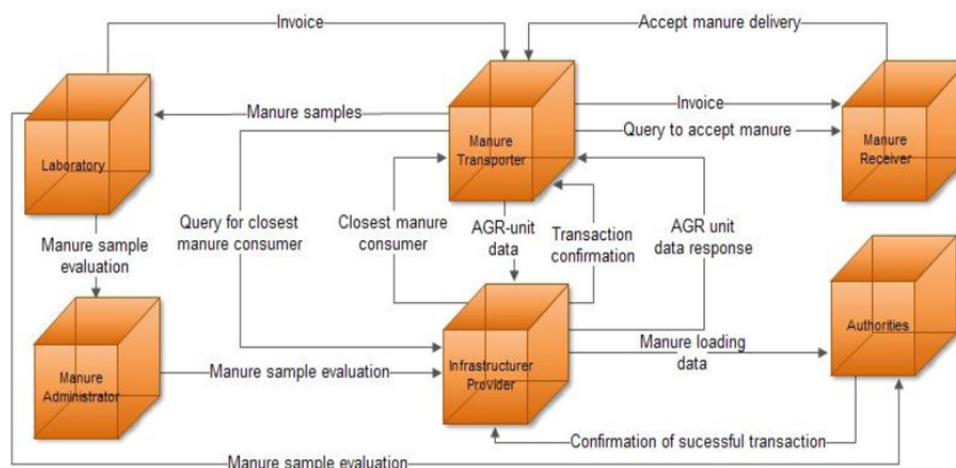


Figure 14 Vlastuin Business Cases and Business Models loading Manure.

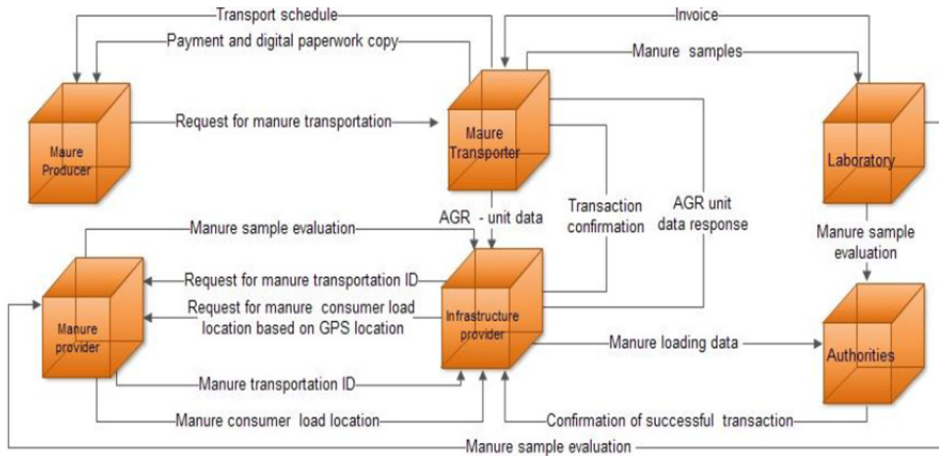


Figure 15 Vlastuin's Business Cases and BMs for Manure Transportation.

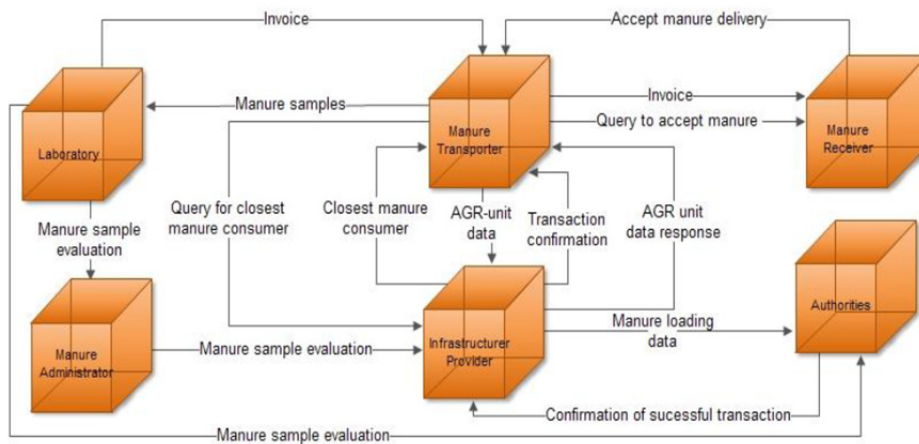


Figure 16 Vlastuin's Business Cases and BMs for unloading Manure.

HSJD Use case



The hospital Sant Joan De Dieu (HSJD) belongs to the Hospital Order of Saint John of God and is a private, non-profit hospital. The order is represented in more than 50 countries and has almost 300 healthcare centers worldwide. HSJD is located in Barcelona, Spain, and is a children and maternity care center. HSJD is a university hospital connected to the University of Barcelona and is also associated with the Hospital Clinic of Barcelona, which helps the hospital to provide top-level technological and human care. HSJD is 95% financed by the Catalanian public system and the remaining 5% comes from private investments. The primary goal of HSJD is to encourage and educate a healthy lifestyle with good nutrition, proper sleep, hygiene and exercise.

The Risk Pregnancy business case

HSJD hospital handles and treats about 4000 pregnancy cases per year. 10% are high risk cases, where the women are in high risk of losing their babies. To postpone the childbirth, the doctor stops these complications and exposes the woman to a daily maternal-fetal monitoring control.

- It is real-time monitoring, concentrated in two parameters:
 - Uterine contraction
 - Fetal heart rate
- It allows the physician to view in real-time the measurement variables of the pregnant lady and her child and to take the necessary measures.
- The realization of this control involves the travel of pregnant women to the hospital, with different frequencies of controls (some have to come every second day, others less frequently)
- It is a contradictory path: since they are high-risk patients, our physicians advise them to not move and stay calm at home. However, the control demands the pregnant women to come to the hospital every day or every two days.

Source: JJ HSJD Hospital

In the “AS IS BM” and in a number of other cases, this control involves patient's admission to the hospital. Today, it is possible to sensor and measure heart rate and other key measurements from the child inside the mother. Those machines and equipment that can measure the child works very well today and nurses can do all the work on preparing and measuring the data from the child.



Figure 17 RPU “AS IS” and “TO BE” BM.

Today, the “AS IS” BM works as the mother leaves her home for a 30 minute visit at the HSJD hospital, where a nurse makes the measurements of the child by putting the equipment on the mother’s “tummy” as seen in figure 17 left side picture.

HSJD’s doctors responsible for the pregnancy “AS IS” BM find it a bit peculiar and not so convenient that they tell the mothers:-

”Don’t do anything — do not move while at home — stay at home”

Source HSJD Doctor responsible for RPU BM

and then they, at the same time, ask them to come to the hospital, transport themselves to the hospital to have the measurements done. Sometimes, the mothers have to come every second day and this is very inconvenient and not a healthy way to act especially for those in risk of losing their child.

The doctors would therefore like to give the mothers another and better solution — as seen in figure 17 right side of picture — something to use at home. They would like to give them some possibility to stay at home and at the same time measure the child. Today it is already possible to monitor diabetes patient in their home.

Doctors and staff at HSJD have worked already two years to find technical solutions and a “TO BE” BM to the challenge and BM ecosystem of risk pregnancy. The result of this work has shown the following challenges seen from HSJD’s perspective

1. Cost challenge — the technique is not cheap enough. Technology has to be affordable to implement. One technology costs 3000 dollars with camera, screen and so on per mother.
2. Price Challenge — HSJD will not and cannot charge the mother
3. Provider and cost challenges — West wireless institute, California US has already developed ”a baby sensor” which costs 25000 US dollar. They are interested, how much exactly they are interested is not known yet.

4. University of Barcelona has also developed a device but this is not tested in real environment
5. The solution has been presented to the medical house with Philips Monitor Careview equipment, however, Philips does not want to take the risk of tele-measuring pregnancy yet.
6. Physician Challenge — it is well known that the measurement can come out with false negative and false positive measurement. Doctors/physicians relying on the new device might then risk falling into some wrong conclusion.
7. HSJD is thinking about how it can involve other physicians outside — near the mother — so the HSJD doctors and experts do not need to be directly involved and HSJD's "market area" can be increased

When we were initially presented with the "TO BE" Risk Pregnancy BM use case, we were not aware of the multitude of the "TO BE" BM and BMI potential for HSJD. This was carefully studied before making the final choice and decision for one or two "TO BE" BMs. Figure 18 illustrates the map of "AS IS" BMs and the proposed "TO BE" BMs registered in HSJD.

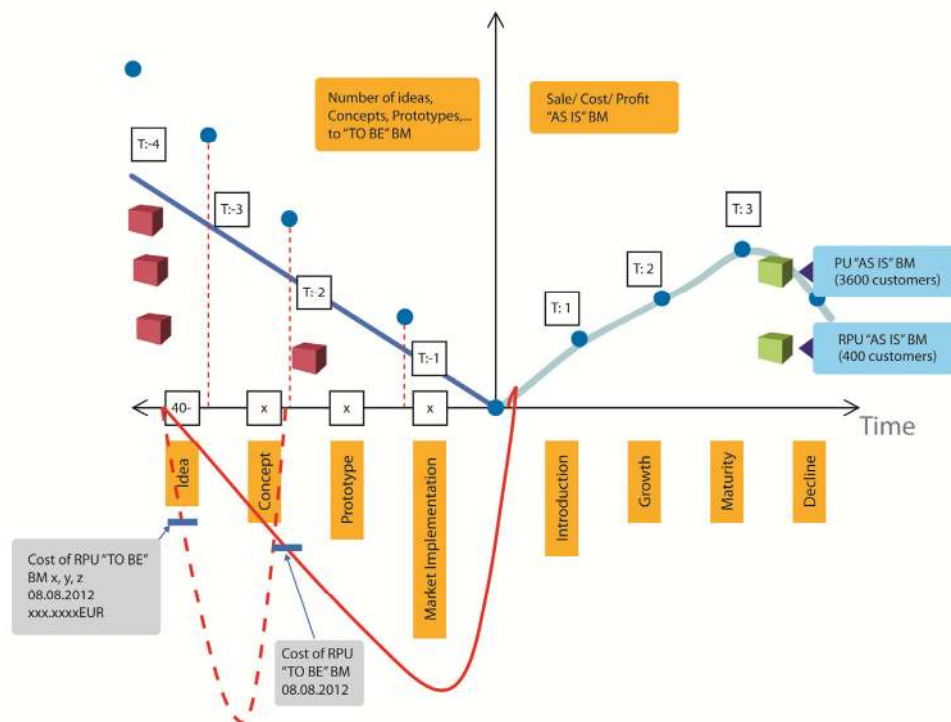


Figure 18 A sketch model of the BMI and BM projects in focus in RPU use case analysis related to BM and BMI lifecycle.

The RPU “TO BE” BM is a new BMI initiative from HSJD’s management which involves increasing HSJD’s activities to also doing RPU with support of high technology equipment. Therefore, this initiative involves a whole new platform of **value propositions** from HSJD, new **customers** and **users**, new **value chain functions**, new competences, new network partners, new relations and maybe new value formulae. This could be classified as, to some degree, radical innovation on many of the BM’s dimensions and components. It could also address and increase the BM ecosystem for risk pregnancy as the “TO BE” BM could address markets in Iraq and Morocco.

The RPU center is in the “TO BE BM” and in the first phase it is addressing a well-known user and customer group in Spain, but in future it would consider also addressing new **user and customer** groups external to the hospital, which will to some extent be radical related to previous target groups. However, we classify this change in first phase as incremental related to most BM dimensions, however, HSJD must be aware that the customers’ environment is now outside HSJD’s control and the BM is operating outside the HSJD physical business environment together with new network partners (teleoperators, equipment operators) which can be risky.

The **value chain setup and functions** that have to be carried out in the RPU “TO BE” BM are now related to some functions, however, HSJD has great experience in the internal and core functions of handling the functions of RPU Women. The functions outside the HSJD hospital are new to HSJD and some of these are also outsourced to network partners as can be seen below.

HSJD has until now controlled most of the value chain functions around the handling of users, customers and network in the RPU BM. A well-developed handling program has been tested and is operating. Now, the “TO BE” BM involves other network partners. So this is all new to the HSJD pregnancy department — to some extent, a radical BMI. HSJD solved this via outsourcing some of the functions to professional network partners — telecom companies, equipment providers e.g.

Competences also have to be developed for technology, HR, organizational systems and maybe also the culture. This can also mean radical innovation.

Network partners are new — relations are not known especially the external network partners. However, all the relations internal in the BM are known but have to be built up from scratch. Therefore, we also classify the change on the network building block as kind of radical.

The RPU “TO BE” BM value formula is not known yet but it seems as if it may be different to other BMs in HSJD as its point of entry is related to different success criteria and different **value formulae** than profit and other BMs in HSJD.

With these characteristics we would classify the RPU “TO BE” BM as seen in Table 6.

Seen in another diagram, the RPU’s “TO BE” BM could be characterized, to some extent, as a risk project as it is changing some building blocks related to the “AS IS” RPU BM in HSJD seen above.

This is very much dependent on which of the several RPU “TO BE” BMs HSJD would choose to implement.

In Figure 19, we propose the space in which the RPU “TO BE” BM can be positioned in terms of its *degree* of innovativeness by means of its radicality, reach and complexity.

Table 6 Classification of Incremental and radical BM innovation related to the 7 dimensions for the RPU “TO BE” BM

Building block	Incremental BM Innovation 'Do what we Do but Better'	Radical BM Innovation 'Do Something Different'
1. Value Proposition	Offering 'more of the same'	Offering something different (at least to the business)
2. Target Users and Customer	Existing market	New Market
3. Value Chain Architecture [Internal]	Exploitation (e.g. internal, lean, continuous improvements)	Exploration (e.g. Open, Flexible, Diversified)
4. Competences	Familiar competences (e.g. Improvement Of Existing Technology, HR, Organizational System, Culture)	Disruptively new, unfamiliar, competences (e.g. New Emerging Technology, New HR Skills, Organizational Systems, Culture)
5. Network Partners	Familiar (fixed) Network	New (Dynamic) Networks (e.g. Alliance, Joint Venture, Community)
6. Relations	Continuous improvements of existing relations (e.g. channels)	New Relations, Relationships (e.g. Channels Physical, Digital, Virtual, Personal)
7. Value Formulae	Existing processes to generate revenues and values followed by/ or incremental processes of retrenchments and cost cutting	New processes to generate revenues followed by /or disruptive processes of retrenchments and cost cutting)

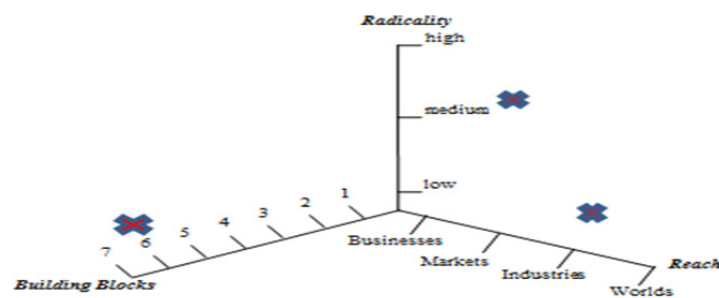


Figure 19 A three-dimensional business model innovation scale – Risk, Complexity and Reach of the RPU “TO BE” BM.

As can be seen, the RPU “TO BE” BM is radical on innovation of building blocks and it is also complex as it is changing six out of seven building blocks. Finally, it can also be classified as far on reach as it is addressing a BM new to the business, market and industry.

As also agreed upon the presentation of the three BMI use cases in detail, the Neffics consortium would be documented within WP 2 D.2.3. Therefore, for further details about the use cases please see WP 2.

APPENDIX 6 BM COMPONENT LIST

Table 7 BM Component list

BM dimension Concept	Group of BM Components	BM Components
Value Proposition	Product, Service, Process of Product and service	Values, Attitudes, Attributes, Tangible and Intangible Values
User and Customer	A person, A Family, A business	Roles
Value Chain functions – [Internal]	Primary functions Support functions	Functions and/or activities necessary to run the BM - inbound logistics, operation, out bound logistics, Marketing and Sales, Service – – Procurement, Human Resource Management, Administration and Financial structure Business Model Innovation
Competences	Technologies HR Organizational System Culture	Product- and service technologies Production technologies Process Technologies Employees and people
Network	Physical Network Digital Network Virtual Network	Roles
Relations	Tangible relations Intangible relations	Relations, Links
Value Formula	Formulae	Formula of price and cost expressed in monetary and/or nonmonetary term.

BIOGRAPHIES

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