The Opportunities of Using Business Models in Service Management – A Review and Classification of Business Model Artefacts

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Through increased globalization and fast changing customer demands companies need to adapt their service management constantly. Business model approaches can provide a suitable base to comprehend the service management of a company. However, existing knowledge about the business model artefacts and the possibilities in service management is very diffuse. With this work, we want to shed light on the state-of-the-art of business model research with a specific focus on the different possibilities for a use in service management. We perform a systematic literature review and present a comprehensive overview of different existing business model artefacts including constructs, models, methods and instantiations. This can be possibly used to support service management and for future research this field. This demands requirements of suitable tool support from theory and practice both. It furthermore strengthens the relation between business modeling and service management. Overall, this research should strengthen the awareness of using the available business model capabilities for service management in order to create powerful management tools.

1. Introduction

Rapidly changing environmental conditions force companies to rethink and adapt their business models (BM) steadily (Chesbrough 2006; Teece 2010). This is because they constantly need to defend their current market position against other competitors. Some changes in the environment can be so profound that completely new BMs are created (Johnson et al. 2008). At the same time, more and more business models are changing from a product to a service orientation. With that, service management, which is often more complex than the management of products, has to face complex challenges to satisfy the demands of customers. Therefore, BM research and supporting BM artefacts can help decision-makers to define adequate supply chains. BMs thereby describe the value proposition (for example services) of a company, related elements like the customers and the relations between these elements (Zott et al. 2011). One example for a well-known BM artefact is the business model canvas (BMC) (2010), which is also instantiated in the form of tools. This BMC as well as the other approaches show the value creation of an organization and the related elements of this value creation (Osterwalder and Pigneur 2010). As a result, these approaches build a communication platform, which provides a rapid overview for example about the services, a company offers to customers and how it offers these services. These artefacts build a “tool of alignment” (Al-Debei and Avison 2010, p. 374), which combines the different company levels and enables a comprehensive view of the service and customer relation among these different company levels.

Although lots of work is done in the field of business modelling and different approaches seem to be suitable to support service management in companies, there is currently no comprehensive overview of the different types of artefacts existing. With a comprehensive overview and categorisation, suitable BM approaches could be detected for the different challenges in service management. However, the existing work is diffuse and not well structured. This was also one reason for Veit et al. (2014) to create a “Information Systems Research Agenda” in the area of business models. Next to this, Hevner et al. distinguish concepts, methods, models, and instantiations (Hevner et al. 2004). Furthermore, beyond the different artefact types
we do not know much about specific intentions of artefacts. With this paper, we want to shed light to existing research on BM artefacts and provide a well-structured overview about the existing BM artefacts. This should not only help to examine the existing research, but also give an overview about the different types and capabilities of BMs for a use in service management. In general, IS research is at the beginning of an era, where business modelling becomes a key focus area (Veit et al. 2014). Furthermore, El Sawy and Pereira (2013) observed, that IS research is shifting from a process focus and the design of IT artefacts towards a holistic BM research including BM tools. Therefore, we want to investigate the existing BM and value proposition artefacts in order to provide a taxonomy not only for service management. For this, we conducted a literature review and used the approach by Webster and Watson (2002), which provides an often used method for such a literature review. Furthermore, it provides also a good structure for executing such a review. The leading question for this review is thereby:  

*Which main research streams in BM artefact research exist and how can they be systematically structured in order to be used in service management?*

In this work, we report about our systematic literature review project of BM artefacts. In the following chapter, we will give an overview of the related work, which is necessary for understanding the principles of the review. Next, we will focus on our method, we used for this review in chapter 3. After this, we present the taxonomy and the results of the literature review. Finally, we give a short conclusion, show our limitations and provide suggestions for future research in the last chapter.

### 2. Related Work and Foundations

#### 2.1. Conceptual Foundations

Since 2012, BMs are seen as a strategic management concept, which should reflect the value proposition of a company (Lindgren and Rasmussen 2013). BM research focus on multiple disciplines like innovation and technology management, entrepreneurship and tool creation (Veit et al. 2014). Timmers define BM as: “An architecture for products, services and information flows, including a description of various business actors and their roles; a description of the potential benefits for the various business actors; and a description of sources of revenues” (Timmers 1998, p. 4). What all BMs have in common are similar elements and common dimensions, like the four dimensions of Al-Debei and Avison (2010):

1. **Value Propositions:** Describe the offered products and services of a company with focus on the customer groups (Osterwalder and Pigneur 2010).

2. **Value Architecture:** This belongs to the core resources and capabilities to perform the key activities to be able to offer the products and services (Timmers 1998).

3. **Value Network:** Shows the relations between an organization with key partners and stakeholders and therefore represents a network (Al-Debei and Avison 2010).

4. **Value Finance:** This includes the cost structures, pricing methods and revenue stream of an organization and its economic configuration (Timmers 1998).

As it can be seen, BM research has a huge consensus on functions of the BM and their dimensions. One example of a BM approach is the Business Model Canvas (BMC) of Alexander Osterwalder and Yves Pigneur (2010). The BMC uses all these dimensions and provides a template with nine categories to capture rapidly the value proposition of a company and the related elements. The BMC contains nine categories as they are “Key Partners, Key Resources, Key Activities, Value Propositions, Channels, Customer Relationship, Customer Segments, Cost Structure and Revenue Streams”. In general, the BMC is often used in practice and this is why many developments and tools are based on it. For example the Business Model Cube combines and enlarges the BMC from a flat two dimensional BM to a three dimensional cube approach (Lindgren and Rasmussen 2013). There included are also more details of the dimensions as for example the relations between the elements.

#### 2.2. Related Work

In general, many different BM tools and methods are existing. Ebel et al. showed, that existing BM tools are supporting the process of designing, adapting and validating the BM of a company (Ebel et al. 2016). At the same time they mention, that existing tools do not fully provide the whole range of tool support, they could do (Ebel et al. 2016). In our literature review, we could also see, that plenty of artefacts for business modelling exist. However, more than half of these approaches only focus on the modelling and less on the support of decision making or implementing (e.g. Aid et al. 2015; Chesbrough 2015). The task of future research will be (according to Ebel et al. 2016) to develop new tools or improve existing tools towards the challenges and demands of today’s business environment. Therefore, we want to show the existing artefacts and their capabilities, so that researchers can identify more easily gaps and develop relevant solutions for these gaps. The different used categories are derived from existing BM theory. For missing categories, we used an inductive procedure as described in the following chapters. In the following, we show in general, how we performed the literature review and which methodological approach we used.
3. Methodology

In this research project, we conduct a systematic literature review according to Webster and Watson (2002). We consider such a literature review promising as it has a broad focus on the state-of-the-art for example in the domain of business models and in general clearly informs the investigation of a particular topic. In this project, we developed a search strategy, defined a set of criteria for selecting the relevant scientific work and crafted a framework for reporting and analysing the selected papers. During this review, we focus on the following questions: What is already known about BM artefacts? What types of BM artefacts are investigated? How can they be classified? Which specific capabilities do the artefacts deliver?

The answers to these questions should not only enable to get an overview of the current artefacts and capabilities in the field of business models. It should also give suitable connecting factors for future research. As a result, we employed a step-wise process under these aspects. First, we used the search terms: “business model OR value proposition model OR value constellation model” to find the relevant papers with focus on either business models as a specification of value proposition or similar to this value proposition and value constellation models. For our research, we used the EBSCO data base as it contains a huge amount of highly rated and cited papers, including the leading IS journals (like the AIS Senior Scholars’ Basket of Eight) and conference proceedings of IS like ICIS and ECIS. Additional, also niche journals are included, which might contain relevant papers, but with such a special focus, that it would not be submitted on huge conference, but on a conference with very special focus.

Due to the huge volume of BM and value proposition literature in general, we have to limit the numbers of empirical studies through further search terms. As we want to focus on BM artefacts, for sure the terms “artefact” as well as the notation “artifact” make related. Related words to these are also “tool” as well as “software”. Finally, we think, that methods in this area can also contain suitable capabilities for BM artefacts. This is why we also included the term “method” to the search string. As a result, the second search string part was “tool OR software OR artefact OR method OR artifact”.

This new search scope reduced the amount of papers, but still a high number of paper was existing. As a result, we decided for a third search string. Before 2012, the term “business model” was more a functional (Timmers 1998; Afuah and Tucci 2003) or theoretic-organizational concept (Linder and Cantrell 2000; Tikkanen et al. 2005). After around 2012, the BM concept changes to a strategic view. This view was triggered, among other things, by the appearance of the BM Canvas. In 2010, the work of Osterwalder and Pigneur: “Business model generation. A handbook for visionaries, game changers and challengers” was published, which increased the popularity of the BM Canvas enormously. In practice, most of the companies used the BM Canvas and still today it is very popular.

This is because the BM Canvas is a strategic management tool, which is widely accepted in theory and practice (Osterwalder and Pigneur 2013). This has great influence on BM research, too. BMs became a new and important role as a strategic management concept. As a result, we added the third part to the search string with the terms “strategy” as well as “management” in the following string: “strategy OR management”. At the same time, we will focus only on papers between 2012 and 2018. The reasons for this are at the one side, that the BM research community is now largely accepting business model research with a strategic focus and is strongly driving research forward.

So far, individual researchers have used the term strategic business modelling, but with the widespread use of BM Canvas, the view of business modelling seems to change towards a management concept. On the other side, companies are using the BM Canvas almost exclusively practice (Osterwalder and Pigneur 2013), so that it seems that with the emerge of the BM Canvas all other approaches are obsolete or no other approaches are existing. This is why we have chosen the mentioned time frame to be able that other approaches are existing and used in their special domain. All in all, as described above, the search string contains three single terms, which should exclude papers with less relevance to the topic. As a result, the final search string looks as follows:

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(business model OR value proposition model
 OR value constellation model)
AND (tool OR software OR artefact OR method
 OR artifact)
AND (strategy OR management)
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This string leads to 8,218 articles in the database EBSCO. However, these results still contain papers, which are not peer-reviewed, are not in English and before 2012. This is why we only focus on papers published after and in the year 2012. Furthermore, we only have a look at peer-reviewed journals in English language with available references. This should ensure, that we include papers with a specific level of quality. These limitations still result in 577 papers, which is still a high number. After reading a few papers, we found out, that even some papers are referring to BMs, they are on the business process level, which should not be part of our review. Therefore, we did a twostep hand sort approach. First, we scan the titles for a process focus of the paper. Through this, we could rapidly exclude around 300 papers. The rest of the papers, around 250, were scanned twice: We did a hand sort on the title...
and abstract. Only papers, which were focused on BMs or in special to BM artefacts, were kept. Through this process, we identified around 80 papers for a detailed investigation. This is shown in Fig. 1.

The remaining 80 papers were the focus of our literature review. We read through the whole paper and checked first, if it is really suitable for our taxonomy and is providing insights for BM artefacts and their capabilities. If this is the case, we rated them according to the type, level, goal and measures as well as the capabilities, described in the paper. The rating process was done by three persons. Two persons individually rated the articles according to the different categories. In the case that one paper was assigned to two different categories, the third person decides for the most suitable categorization in his point of view. However, the accuracy between the first two people was already 93 percent, because often the articles indicate, which category should fit best. As a result, we evaluated more than 40 different artefacts and their capabilities (according to Webster and Watson 2002).

As the purpose of this literature review is to categorize the existing BM artefacts and the related capabilities with regards to different dimensions, we conduct existing classifications and additionally derive requirements for the capabilities (similar to Nickerson et al. 2017). To general categorize the BM artefacts, we use the existing definitions for the level of the artefact (Afuah and Tucci 2003), the goals of the artefact related to BMs (Bieger and Ruegg-Stürm 2002) as well as the measures and activities, the artefact fulfills. For the artefact capabilities, we followed a different approach. According to the method of Nickerson et al. (2017), we focus in our taxonomy more detailed on the artefact capabilities. Following this approach, we have to define requirements for the BM artefact capabilities, which describe them suitable enough on the one side, but is not too specific, that the approach finds an end and is eloquent enough. The approach finally results in developing a final taxonomy. Due to this approach, we first selected randomly five different papers in a first step to define classification terms for the business models capabilities as the iteration process proposes (Nickerson et al. 2017). After this first iteration, we added step by step another paper and compared the artefact capabilities, described in the paper with the existing ones of our review sample. As a result, the rest of the papers principles were compared with the existing principles. This results in 13 terms which should abstract the different capabilities of the paper artefacts. To get a better overview, we classified them according to the common purposes of BMs as there are “Modeling, Decision Support and Implementation Support” (e.g. Osterwalder and Pigneur 2010). To ensure a correct coding process, we paid particular attention to the comprehension of the meaning and definitions in the paper. This is because different papers can use different meanings or definitions for terms, which are normally synonyms. On the other side, we tried to cluster carefully synonyms or terms, which describe the same. With that, we want to make sure, that we only cluster that terms, which really belong together.

4. Taxonomy of Business Model Artefacts

Based on the approach of Webster and Watson (2002) and similar to other taxonomy approaches of BMs (Ebel et al. 2016) we derive several dimensions of the BM artefacts. These dimensions will be presented in the following. Afterwards we categorize the papers along these dimensions and discuss their characteristics.

4.1. Scope of BM Artefacts

As mentioned, the main task of a BM is to describe the relevant aspects of the value creation and the value proposition of the company (Osterwalder and Pigneur 2010). However, not every BM approach does this on the company level. Next to the company level, also the industry level exists with a more abstract view and on the other side, also the more specific levels of the business unit and the product level exist (Wirtz 2011; Afuah and Tucci 2003).

1. Industry Level: This is the most abstract view of BMs. External factors and environmental conditions are included in this view and also aspects of strategic management, which are for example also part of Porter’s value chain (Porter 2001). The goal is not only to get an
overview of the surroundings of an organization, but also on the different internal aspects like the production of goods or services in the company (Porter 2001; Afuah and Tucci 2003).

2. Company Level: This is for example the level of the BMC. In general, the company can be identified as the level of abstraction below the environmental level. According to Afuah, this level contains three essential factors: Resources, activities and the positioning of the organization in the market (Afuah 2004). This view is more closed to the internal aspects of the company, but has nevertheless also links to external aspects like customers or suppliers (Wirtz 2011).

3. Level of Business Unit: Especially for large companies a look at the whole company is too complex to represent all relevant aspects. Therefore, some BMs have a look at business units with a special product or service. In the focus is the functioning of one or more business units and their value propositions. In a company, many of these partial models can exist, which not need to be consistent with each other (Afuah 2004).

4. Product Level: This is the lowest possible level and focuses on products or services. In an integrated view different segments of the product or service creation are summarized. As a result, the profitability of a company can be comprehended fully in a holistic view (Wirtz 2011; Ding et al. 2014).

Depending on the context of the application of the BM framework, the appropriate level has to be chosen. Next to the level, also the BM goals have to be fulfilled.

4.2. Goals of Business Models

Next to the level of BMs, also the goals of BMs are important. Again, eight dimensions of BM literature were found and described (Bieger and Ruegg-Stuermann 2002). They found out, that these dimensions are not strictly separated, but can have interdependencies between each other. This is because a BM approach can aim to fulfill more than one goal (Bieger and Ruegg-Stuermann 2002). This implies the threat, that different interpretations and use cases are possible and can lead to misunderstandings (Wirtz 2011).

Through the similarities of the structure of BMs Bieger et al. were able to formulate BM goals as eight dimensions, considering these structures (Bieger and Ruegg-Stuermann 2002): Organizational Concept, Cooperation Concept, Coordination Concept, Concept of Growth, Competence Configuration, Revenue Concept, Performance Concept and Communication Concept. These concepts imply the goals of the BM approaches. If for example an approach is a cooperation concept, it wants to increase or improve the cooperation in the BM network. Next to this structure, different approaches exist (Osterwalder and Pigneur 2010), but they can be reduced on the same level as they want either improve the configuration of relations or the configuration of resources or competences (Bieger and Ruegg-Stuermann; Wirtz 2011). Closely related to these BM goals are also the BM activities and measures in the following section.

4.3. Activities and Measures of Business Models

Besides these main goals, BM approaches can also be characterized through the activities and measures, these approaches are able to perform. According to BM literature, six procedural objectives exist (e.g. (Osterwalder 2004)), which should also fulfill procedural goals:

1. Describing Business Activities: One goal of BMs is the concrete and full description of the business activities. Especially BMs on a company level or lower partial model levels can describe these business activities explicitly. Mental business processes and models, as well as interactivitys were described, which should help to set the mind of the managers free and consolidate the information (Osterwalder and Pigneur 2010). This is closely connected with the next goal.

2. Visualize Business Activities: As mentioned, the described business activities can (but not necessarily need to) be visualized. This can support the decision making process (Osterwalder and Pigneur 2013). Additionally, the graphical representation can be used for human resources development or to adapt BMs more easily (Wirtz 2011).

3. BM Realization: For purposes of a BM reconfiguration or in a cases of disruptive change for BM innovation, the BM realization plays a central role. It provides an overview of the relevant factors of the change process of an organization. Additionally, it should help to ensure the implementation of the new BM and all relevant aspects in the organization and with that should increase the likelihood of success (Kagermann and Ostler 2007).

4. SWOT Analysis: The internal and external potentials of a company have a great impact on the decision making. One advantage of business models is the representation of chances and risks for the organizations as well as their strengths and weaknesses. Thereby, the BM is checked continuously, if new synergetic effects or advantages of efficiency can be used (Debelak 2006).

5. Supporting Holistic View: In today’s business, more and more information and performance indicators are created. Therefore, it is important to keep a comprehensive view about the different scenarios for decision making. Furthermore, it can support the identification of potentials for the company (Eriksson and Penker 2000).
6. Reduce Complexity: For the strategic management level relevant and abstract information about processes, competences, resources, competition and finance should be available. The BM helps to reduce complexity through an aggregated representation, which leads to better decisions (Bridgeland and Zahavi 2009).

All in all, business models can fulfil more than one of these goals. In the following section, we will show, which business model approaches fulfil which of these goals and provide a taxonomy of the business model artefacts and their capabilities.

4.4. Taxonomy of BM Artefacts and Special Focus on Capabilities

Different dimensions and characterizations exist to categorize BMs and especially BM artefacts. Next to the three described categorizations, we also include the characteristic “Artefact type” with its four instantiations: Construct – Model – Method – Tool. This characterization should show the level of applicability. A construct is a rather theoretical and abstract artefact, while naturally a tool is very practical and well instantiated. In between there are the model and the method. A method is also practice oriented and easy to implement, but not necessarily implemented yet. A model is between the construct and the method and more theory oriented, but provides a good overview of the single elements which can be then formulated as a method and instantiated as a tool. Thereby, each paper can only be associated to one instantiation.

Second, as described in the method, we will also have a look at the artefact capabilities. However, the tool functionality in general and even with focus on BM tools is very broad and hardly to describe overarching. Therefore, we developed our own characterization according to the method of Nickerson et al. (2017). The single capabilities were clustered additionally towards their overall aim. These aims are: Modelling – Decision Support – Implementation Support. Thereby, papers can have capabilities of more than one category, which we considered in our taxonomy.

As it can be seen in this morphologic box, the artefact type is nearly equally distributed. Only the type “method” has a lower percentage than the others. Looking at the level of the artefacts, nearly 75% focus on a high level, with 34% on the “industry level” and the majority 40% on the “company level”. In contrast to this, the fulfilment of the goals of business models is again nearly equally distributed with exception to the organizational concept, which more than each fourth paper fulfil. Having a look at the BM activities, the SWOT Analysis achieves the highest percentage (31%), followed by the aim to support a holistic view (26%) and to visualize activities (19%). Finally, the artefact capabilities are distributed unequally. Nearly half of the articles focus on (business) modelling, while only one third have a focus on decision support and even less on implementation support.

To sum it up, the taxonomy shows on the one side an equal distribution of research concerning the artefact type and the fulfilment of the BM goals. On the other side, the level of artefact and the activities and measures as well as the artefact capabilities are not equally distributed. This does not mean, that there is a lack on research on the parts with a lower percentage per se. It could also be thinkable, that these parts are less attention grasping to be researched and research focus on the other parts more. However, looking at current trends and the mentioned faster changes of the environments and the related adoption of the BMs (Chesbrough 2006; Teece 2010), research is lacking in at least some points. Most diverse to this development of changing environments are the artefact capabilities. Only one third and less than one fourth of research is focusing decision and implementation support, which should be in the focus to demand these trends. For the BM activities, this means also, that BM realization should be more in the focus. Only three papers have a look at this topic so far (numbers see attachment). Last but not least, more artefacts should be implemented as tools, as also Veit et al. (2014) demands. These tools can help decision makers to successfully adapt their BMs to the new situations. This could be an answer to the fact, that the majority uses only the BMC, which is good for representing the
current BM of a company (Osterwalder and Pigneur 2010, 2013), but does not provide decision or implementation support. This could also be seen more detailed in the following morphologic box, where the single capabilities are described.

In the class “Modeling”, most of the papers focus on potential identification and monitoring as well as on analysis. With respect to a BM adaption or innovation, these are good foundations to retrieve a status-quo of a company as starting position. Related to this is a suitable decision support for finding the right strategy for BM adaption. Furthermore, the numbers seem to support these trends: Around one third is focusing either on optimization or on planning. Half of the rest is focusing on BM Innovation and risk management each. These capabilities build a good base for BM adaptions. However, looking at the absolute numbers, these are only 25 papers in the period of 2012–2018, which provide an artefact for decision support. Even less papers (16) focus on the implementation support and out of these, only one third on the implementation process itself. Most of the papers have a look at the factor utilization and only 13 % focus on change management or simulation. As a consequence, if one defines an adaption or innovation process as: “Analyzing Status-quo (Modeling) – Define target state (Decision support) – transform current BM to target BM (Implementation Support)”, lots of research is existing for the first process step and artefacts are existing. However, for finding a strategy and being supported through an artefact as well as the transformation towards the target BM lacks of research looking at the numbers of publications. All in all, these results as well as possible outlooks will be discussed generalized in the next section.

5. Discussion

Since 2012, business modeling is of growing interest for theory and practice. Especially for the service management different opportunities are existing. The taxonomies give an overview of the existing artefacts related to BMs. Although lots of tool support is existing, which can be also used in service management (e.g. Ebel et al. 2016), still the full potential of tool support is not used. By looking over more than 100 papers, only around 40 artefacts could be retrieved, which are providing support for management decisions and tasks. Second, we showed, that existing research and tools are focused on aspects, mostly related to model for example the status quo of the service-customer relation of a company. Only few artefacts focus on decision support and even less on implementation support. However, these are important factors in the cases of changing or creating new supply chain relations between the company and the customers. At the same time, growing globalization and fast changing demands can force companies to adapt the supply chains in ever shorter time cycles. Tools or artefacts should support this adaption process. In fact, only few artefacts are existing to fulfill these demands and there is a great gap for future research. Last, we provide a classification for artefact capabilities, which can be used also for other taxonomies or can provide a set of possible features for future artefacts. As an example it is thinkable to build a specific service management tool with a holistic focus on the value creation of the company. Insights from service management and business modelling both can help to fulfill the mentioned demands and to be able to face the challenge of the fast changing environments and customer demands.

However, the results of this study have to be interpret with some limitations in mind. First of all, we interpret the BM concept as a strategical or management concept (Wirtz 2011). Therefore, we set a time frame between 2012 and 2018. Of course it is thinkable, that further work is existing, focusing on strategic management and with that also further artefacts. Additionally, the work of Osterwalder and Pigneur (2010) is from the year 2010 and would be excluded from the results. It should be added that their work can be seen as a kind of starting point for BMs as management tools and naturally some time is needed till this topic was established. So the timeframe 2012 till today still seems to be suitable. As a result, we assume a high validity of the results concerning this limitation, as the huge majority of articles with focus on BMs as strategic management concept is published after 2012 (e.g. Ebel et al. 2016). Second, the focus of this work was on BM artefacts. It is also thinkable, that there are more existing articles, which provide a solution to the mentioned demands without naming them software, tool, artefact or model. Fur-
Moreover, we analysed the amount of papers and not the amount of tools. It is thinkable that one paper is dealing with more than one tool, which we paid attention to. Otherwise the paper count could not be used in a metric way. Third, the presented artefact capabilities are based solely on the articles of this taxonomy. Therefore, it is thinkable, that additional capabilities are not covered by this taxonomy. As a result, there could exist a demand of capabilities, which are not included in the taxonomy, but are of high interest by theory or practice. Last, a taxonomy is not perfect and has subjective insights (Nickerson et al. 2017). It can only be useful in the best case. Not each dimension of the taxonomy is relevant for each artefact and more than one categorization is suitable for some artefacts. As a result, the taxonomy provides only a direction, in which future research of service management can lead. Next to service management, future research can have a look for example at ecosystem business models. As a result, this would follow a different logic as the use BMs in service management. In this case, it is also thinkable to compare these and the traditional BM approaches. As a result, we encourage for a future artefact development a more detailed research in the related field to get a detailed overview of the particular requirements.

6. Conclusion

With this study, we wanted to shed light on the question of the state-of-the-art of BM artefacts concerning their capabilities in service management. Till today, lots of work is done in the area of business modelling and lots of potential is existing for service management. However, this work is diffuse and not well structured, which we want to change with this work. The results show, that there are around 40 artefacts, which can support service management. However, out of these 40 artefacts, only 11 are implemented as tools. As Ebel et al. (2016) already mentioned, there is great potential for new tools, which support modelling the value chain and the related factors. Next to this, most of the tools are supporting the modelling of the status quo for example of the relation between the value proposition and the customers. In a time of fast changing environments (Chesbrough 2006), it is not enough to just model such a status quo, but also to support decision making and an implementation of new relations between the value proposition and the customers. In this work we showed, in which areas a high number of research papers was published as well as quantitative gaps, where more research could be done. Additionally, we provide a set of capabilities of the current artefacts usable in the field of service management. Furthermore, this set of capabilities can deliver a further categorization possibility either for future projects or for taxonomies in other areas. Furthermore, we revealed the gaps, which could be filled with future research. In particular, these are at first: Improving and developing existing BM artefact approaches concerning different areas as for example service management. Second, as there is only few work done in decision and implementation support: Development of artefacts and especially tools out of existing research of decision and implementation support, for example in the area of service management in uncertain or disruptive environments. To sum it up, there is great potential in the area of building and using BM artefacts in service management (Ebel et al. 2016) and both, practice and theory will profit from the realization of existing and new knowledge in this field.
**References**


Augenstein, The Opportunities of Using Business Models in Service Management


Keywords

Service Management, Business Model Artefacts, Business Model Capabilities