BUILDING A BUSINESS MODEL TRANSFORMATION TOOL

Dominik Augenstein[1]

1. Introduction

Increasing global competition, higher degrees of uncertainty as well as new opportunities driven by a growing number of digital services force companies to adapt their business models (BM) to the new environment [Te10]. Not only since the age of the digitalization, services have become more and more important in companies' strategies. Additional pressure is created through the fact, that consumers are more than ever able to compare these services on the markets. Therefore, companies have to rethink their traditional way of doing business.

Today, BMs become more and more important in different research disciplines like strategic management, entrepreneurship or marketing. However, it still exists a huge potential for research inter alia in the field of information systems and the context of the digital service transformation in particular [Ve14]. Companies increasingly concentrate on redesigning BMs focusing on digital services. To support business modelling, several methods, techniques and tools exist [EBL16]. The most known is the BM canvas, which is also often used in practice [OP10]. The focal point of these concepts, as the BM canvas, is primarily strategic and less focused on the executability of the defined BMs. The canvas in special is good for a rapid outline of an existing BM [OP10]. However, adapting BMs or a supervision over a period of time need a redrawing of the whole template or ends in a loss of overview. Furthermore, people are not willing to spend a lot of time filling out a BM template and are willing to have a BM in a short period of time [OP10]. However, a good overview of the current business model is an important base for a transformation This is important for example after disruptive changes, which require changes of the current BMs (e.g. [JCK08]). Thereby, BM innovation is a key to firm performance [ZAM11]. Therefore, it is important to have a valid base for such transformations. The BM canvas cannot gain this validity per se, because it is more a template, where people can fill in their own "view" on the business [OP10]. This includes the challenges, that this view is not corresponding to the real way of doing business. Additionally, the whole process of transformation is not fully supported through the existing BM approaches, because they lack of executability [EBL16]. We therefore want to answer the question:

How can business intelligence be used in a business model tool to get a consistent state of the actual business?

As "tool intelligence" we apply a mining algorithm, which uses data of an ERP system to fill a BM automatically. Users only have to adapt this bottom-up view through their top-down knowledge. Additionally, we want to build a tool, which supports the

[1] Karlsruhe Institute of Technology, IISM, Fritz-Erler-Str. 23, 76133 Karlsruhe, dominik.augenstein@kit.edu

transformation efficiently and objectively. Therefore, information and data of the ERP systems and other sources could be used to build a BM tool, which provides a proposal for a modeler for his own BM, which he can adapt. The advantages in this approach are, that the model is objective and the process of creating the model is standardized. So if each model is created in the same way, different models can be combined (automatically). This plays a role if for example one wants to compare the current and the target state during a BM transformation (e.g. [JCK08]). Additionally, it lowers the effort of modelling a BM.

2. The DSR Project

Aiming to design BM tools with a higher consistency, we apply the Design Science Research approach of Vaishnavi and Kuechler [VK04]. We consider this approach as a promising possibility to not only understand the factor of increasing consistency, but also to propose an adequate solution. Furthermore, with this approach we hope to support BM transformations, for example after external shocks [JCK08].

For this, we decide to involve companies in our research, which have great experience in business modelling and its execution. We therefore collaborate with KPMG and Bosch GmbH. Especially KPMG is interested in using the results of the project. In a joint project with Bosch we use the tool to model real scenarios and get potentials for improvements. Bosch itself wants these insights for improving their BM practices. The access to individual usage of the tool in companies enables us to collect data in document analyses and interviews. According to Vaishnavi and Kuechler [VK04] we plan our DSR project in three cycles as shown in the following:

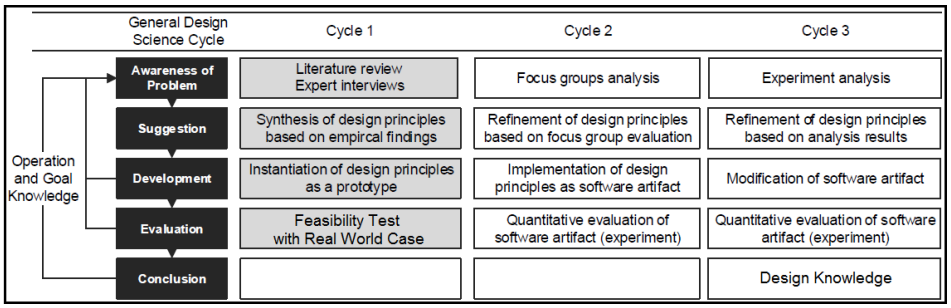

Figure 1. DSR Cycles (according to [VK04]).

In the first design cycle we select our industry partners (KPMG and Bosch) because of their knowledge of strategy implementation in different companies and the related BMs. At the beginning, we want to analyze the different requirements towards BM models concerning flexibility and operationalization. Therefore, we do exploratory interviews with KPMG about their use of BMs in the digital transformation and their needs. Besides this, we derive requirements out of literature, suggest a first set of principles and develop a first prototype. As a result of the interviews and the literature review, we proved not only, that the existing BMs and especially the BM canvas are suited on the strategic level [OP10]. This means a high abstraction level and impede a mediation

between strategy and operational levels [AA10]. We get additionally concrete insights on how to improve the BM canvas. Therefore, we want to propose a BM tool, which enables higher consistency as an overall purpose and supports BM transformations (following the research achievements of Zott et al. [ZAM11] and Veit et al. [Ve14]). We therefore want extract the data from different ERP systems and process them into the different canvas categories. For a better comparability of different models, we also rebuild them in a graph. The status quo and target BMs should be captured using graph models to allow different configurations and should be comparable. Additionally, KPIs should reflect the implication of changes, as they are linked with the graph elements.

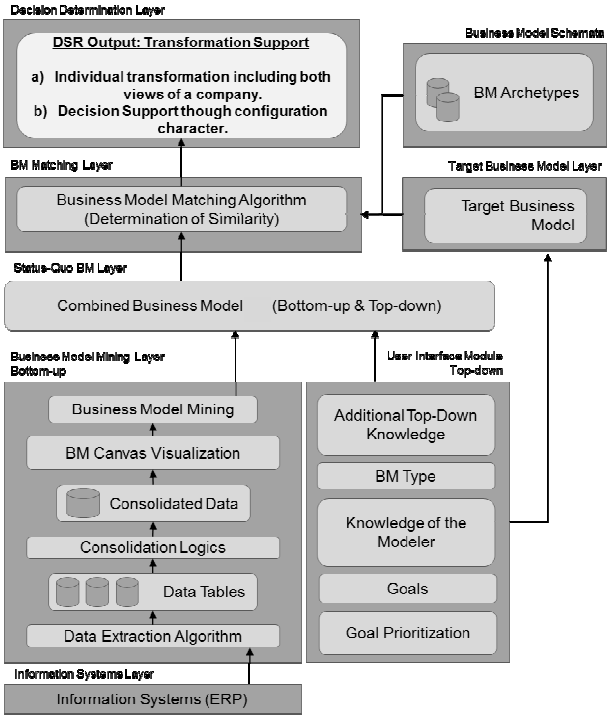

Figure 2: Technical Concept

In the tool, the BM canvas is transformed into a graph. The graph is built of different knots and connections between them. The knots represent the known categories as well as concrete elements in this category. The elements are retrieved from exemplarily ERP data. The relations between the elements reflect the structure of the BM Canvas. The user can also define suitable KPIs and relate them to the belonging categories and elements. In the tool, the user can click on an element and can fill in an Excel. KPIs can be connected among elements through foreign keys. On the right-hand side in the following picture, one can see the planned configuration functions of the tool in a mock-up. There, two different BMs are compared with each other. The mapping is automatically, based on a common set of elements. Elements which are not included can

be observed separately. For example, the element “Repairers” is not included in the current BM and could be realized with internal or external resources, both influencing the KPIs. Like a configurator, one can see easily the influence on different decisions.

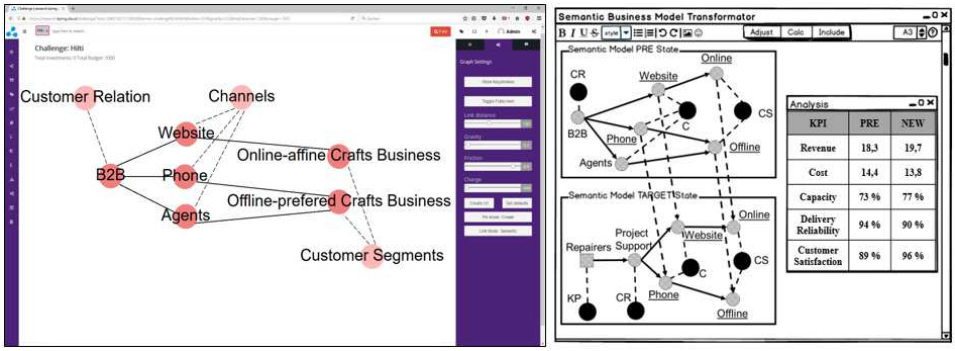

Figure 3: First functions of the BM Transformation Tool and planned features as a mock-up

To evaluate this first prototype, we take a real-world case provided by Bosch. In this case, current BMs are modelled using the model. To aim the target states, possible future BMs are defined. To be able to make decisions and statements on the different models, they are mapped and differences are observed. Finally, through configuration, improvements can be found. The results are used as a base for improvements.

In design cycle two, the evaluation results of cycle one will be used to improve the BM transformation framework. To evaluate the derived design principles, a laboratory experiment is planned. Its’ advantage is the control of the context with a high internal validity [Bh12]. We are aware, that one challenge with these experiments is the low external validity. However, the context of the experiment is set explicitly in a way, that the results can be adapted easily to practice. A real world case will be selected, where students have to build a BMs using different tools. Two groups will perform the same tasks. Each group will have 60 people. Each of them is doing the same task. People of group one will get the BM transformation tool, while people of group two only will use basic BM canvas templates. As tasks, they have to model a BM of a Bosch product, based on given information. Then, they have to model a future state, also based on given information. Finally, they have find out an optimal way of realizing the BMs. The BM transformation tool will thereby give a prefilled canvas, which the students only have to adapt. As the BM transformation tool provides advanced support, we expect group one to achieve better results than group two.

As participants we expect 120 graduate and undergraduate students from a German university. As they might have little competences in business modelling, they will receive a basic introduction. However, the tool as well as the BM canvas template are meant not only for experts, but also for novices. The participants will be assigned randomly to the two groups. Before the experiment starts, they have to pass a self-learning test (multiple choice), where they have to proof their understanding. Then they have to perform the defined tasks. As a reward, they will get a performance-dependent

incentive. After this tasks, the participants will have to perform a second test (multiple-choice) about the understanding of the tasks and the field of BMs in general. Additionally, they will be invited to give qualitative feedback and suggestions for tool improvement or for limitations of the canvas, depending on the group.

In design cycle three we want to evaluate our BM transformation tool in a real-world environment [Pe12]. We use the results of cycle two to improve the tool and do then execute a field-based evaluation. As the laboratory experiment in cycle two gives high internal but low external validity, we want to rise the external validity. Therefore, we cooperate with our partner KPMG to focus the field study as much as possible. This enables a better comparability and generalizability of these results with the results of the laboratory experiment [Bh12]. As participants we select consultants of KPMG as they are one representative target group for such an improved BM tool. In their daily work they already get in touch with BMs and the BM canvas frequently. As a consequence, they are experts in BMs and need less time for an introduction in this field. We want to have a look at 30 projects and the performance of this tool in this field experiment. The consultants will use the tool in their daily work. We will observe then, how they use the tool and where we can find potential for optimization. Additionally, they have to fill out a questionnaire. We define several KPIs like revenue or costs are defined, which should be improved with the tool. After the experiment, the results will be discussed with the participants. There they can give a last feedback about the tool and if it improves their work. Finally, we will publish an overall paper, were we show the new design knowledge, differentiated from this DSR project.

3. Conclusion

This proposal presents in a nutshell the ongoing design science project on designing a semantic BM transformation tool. Building on existing concepts, especial the BM canvas, we deduce design principles for BM transformation tools (e.g. [Ti98; AA10; LR13]). A high degree of internal and external validity will be given through the proposed combination of laboratory and field experiments. On the one hand, the laboratory experiment in cycle two has a high internal validity. On the other hand, the field experiment in cycle three provides a high external validity. We see this research project as a contribution to design science research and information system community both. The resulting design knowledge can be used by researchers for their own research on BM improvements. Practitioners can use the tool to evaluate BM transformations better and get support through a state-of-the-art tool. As a result, we suggest to extend the BM canvas with semantic elements. One advantage here is, that different BMs can be compared and mapped easily. It is thereby simple to observe gaps between different BMs. Therefore, the tool includes a function to find out the most suitable configuration.

This design science project is currently at the end of cycle one: After the comprehensive study of literature, expert interviews and the evaluation of real world cases, we found a first set of preliminary design principles and instantiated a first artefact. The artefact and especially the semantic model approach is evaluated in a feasibility test at Bosch. We hope to be able to show, that the model is more consistent and better supporting digital

transformations as the traditional BM canvas. We expect, that different BMs can be compared more easily. Additionally, we expect, that the advanced model can be adapted much faster than the traditional one. As shown, future work in this project will be the adaption and evaluation of the tool in order to derive reusable design knowledge.

Besides general feedback, there are some challenges and open gaps which I would like to discuss in the doctoral consortium: (1) Although the design principles are well grounded in literature and practice both, I would like to discuss their completeness, e.g. including findings from other research areas. (2) As the traditional BM canvas is easy to use, I want to discuss, how abstract the tool should be, as there is a payoff between functionality and usability. (3) In addition to (2), but also in general I would like to address the following question: Which degree of automation should be included in the tool as there is a payoff between loss of control and effort to model BM for users. (4)

References

[AA10] Al-Debei, Mutaz M.; Avison, David (2010): Developing a unified framework of the business model concept. In: European Journal of Information Systems 19 (3).

[Bh12] Bhattacherjee, Anol (2012): Social science research: principles, methods, and practices.

[EBL16] Ebel, Philipp; Bretschneider, Ulrich; Leimeister, Jan Marco (2016): Leveraging virtual business model innovation. A framework for designing business model development tools. In: Information Systems Journal 26 (5), S. 519–550. DOI: 10.1111/isj.12103.

[JCK08] Johnson, Mark W.; Christensen, Clayton M.; Kagermann, Henning (2008): Reinventing your business model. In: Harvard business review 86 (12), S. 57–68.

[LR13] Lindgren, Peter; Rasmussen, Ole Horn (2013): The business model cube. In: Journal of Multi Business Model Innovation and Technology 1 (2), S. 135–182.

[OP10] Osterwalder, Alexander; Pigneur, Yves (2010): Business model generation. A handbook for visionaries, game changers, and challengers. Toronto.

[Pe12] Peffers, K.; Rothenberger, M.; Tuuanen, T.; Vaezi, R. (Hg.) (2012): Design science research evaluation. International Conference on Design Science Research in Information Systems: Springer.

[Te10] Teece, David J. (2010): Business Models, Business Strategy and Innovation. In: Long Range Planning 43 (2-3), S. 172–194. DOI: 10.1016/j.lrp.2009.07.003.

[Ti98] Timmers, P. (1998): Business Models for Electronic Markets. In: Electronic Markets 8., 1998 (2), S. 3–8.

[VK04] Vaishnavi, V.; Kuechler, W. (2004): Design Science Research in Information Systems.

[Ve14] Veit, D.; Clemons, E.; Benlian, A.; Buxmann, P.; Hess, T.; Kundisch, D. et al. (2014): Business Models - An Information Systems Research Agenda. In: Business & Information Systems Engineering.