ADAPTION OF THE BUSINESS MODEL APPROACH FOR PUBLIC ENTERPRISES

Abstract

Several innovative technological and social developments are shaping the business models (BMs) of companies nowadays. Having knowledge of the own BM is not only relevant for private companies, but also gains importance for enterprises in the public sector, so called public enterprises, as they face increasing competition. While existing BM approaches target private companies and work well for them, a specific BM approach for public enterprises (PEs) is still not available. In this paper, we adapt a BM approach, which aims to take into account the characteristics of PEs. Three example cases provide first demonstration of the applicability of our approach.

Keywords

Business model, public sector, case study analysis.

Introduction

In 2017 the toy store chain “Toys ’R’ us” declared insolvency for the American and Canadian market as the company did not understand the opportunities of online business and also neglected the risks coming from online competitors (Bolton and Shankar 2018). While digitalization leads to a shift of business models in the markets regarding the private sector, the public sector starts to enter new markets by making use of the potential of new technology: For example, organizations dealing with water management, which are mostly public enterprises (PEs) (for our general understanding of the term PE see Bös (1989)). These companies saw the potential of digitalization and have already started to develop digital solutions in response to new customer demands and extreme weather events. The German Federal Ministry of Economic Affairs and Energy (BMWi) supports a project called KOMMUNAL 4.0, which focuses on questions referring to digitalization and connectivity in water management. Pilot organizations of this project seek to develop a digital business model (BM) that includes e.g. web-based data and service platforms (KOMMUNAL 4.0, 2018). This example shows that private as well as public organizations have to manage digitalization to remain competitive or to face new requirements with respect to competition, respectively.

Furthermore, there is the insight that “tomorrow’s competitive advantage of companies will not be based on innovative products and processes, but on innovative business models” (Gassmann et al. 2014, p.5). For companies, the analysis of the status and the development of an innovative BM are accepted and frequently used processes in order to capture and gain economic value. For PEs, like universities or public administrations, BM approaches are rarely discussed in scientific literature and maybe even less discussed in practical application. So more research on the management of public organizations with approaches for for-profit companies is needed as in many respects, companies and PEs function in different ways and
follow different target systems. While companies are mainly driven by an economic target system with the main goal to increase profits, PEs also consider social and societal issues. However, more and more PEs are confronted with a new situation in competition as private companies offer similar products and services (Ranerup et al. 2016). The unbundling of BMs by separating parts of the formerly integrated BM and offering them individually on the market can also be observed in different sectors of the economy, and the new business form is known as “Techs”, e.g., in the banking sector (Gomber et al. 2018). It is not surprising that nowadays also PEs have to handle the market-like mechanisms. Therefore, PEs have to analyze their BMs with its components. However, a structured analysis and adaptation of BM approaches for PEs is still missing in scientific literature. Therefore, the goal of the paper is the development of an adapted BM approach for PEs. To reach this goal, we answer the following research questions: What are the characteristics of PEs, which have to be considered for the BM design (RQ1)? and how does an adapted BM approach for PEs look like (RQ2)?

In order to answer the research questions, we first build the conceptual foundations by discussing the public sector and BMs in general and by outlining a current state of the art on BM approaches for PEs. Based on an argumentative-deductive research we adapt a BM approach to the requirements of PEs by considering each element of the BM approach. As Mühlenkamp (2015) stated that, the differentiation between PEs and companies are not always precise and easily separable, the BM characteristics for companies are still of relevance for our analysis. For a first demonstration of our results, we conduct example cases among three PEs.

Conceptual Foundations and State of the Art

In this chapter, the characteristics of the public sector are analyzed as they build the frame for the adaptation of the BM approach and we choose an applicable BM approach and describe its elements. For the design of a BM approach, it is necessary, to analyze the characteristics of PEs and to consider their different customers, stakeholders, and purposes. The goal of a PE is not only to satisfy customer needs and increase profits, but also to consider collective human needs (Yeung 2005). The purpose of PEs is to “maximize social surplus” (Laine and Ma 2017). Therefore, PEs must take the market side as well as the civil society, and the state with laws, rules, and the political will into consideration. From the market side PEs are influenced by profit-making companies with the market price for a product or service. Ministries, executive agencies, the legislature and the judiciary shape PEs from the state side by laws, rules and the political will. The third influencing factor is the civil society with knowledge and commitment (Yeung 2005).

For the differentiation of private enterprises and PE we follow the description by Lindgren and Jansson (2013). We refer to private enterprises in the following as companies, which focus on their customers with their individual needs and try to fulfil these needs respecting laws and rules (Yeung 2005) with the purpose to maximize profit (Laine and Ma 2017). This conceptual distinction goes along with the simplification that the characteristics of PEs are clearly distinctive from those of companies and the other way round. However, in reality this differentiation does not apply as PEs also show characteristics of companies. We find that, e.g. shares of companies are also hold by public entities or governments influencing the management based on public interests (Mühlenkamp 2015). This is the main reason, why we deem it appropriate to adapt the BM approach conceived for companies for PEs.

For an holistic view on enterprises and being able to compete in markets it is helpful to think in BMs (Morris 2013). Massa et al. point out three different interpretations of BMs to be found in scientific literature. We follow the interpretation that BMs are “formal conceptual representations” as we base our model on the analysis of detailed characteristics of the PEs its products or services and its environment (Massa et al. 2017). Therefore, BMs are understood as “a conceptual tool that contains a set of elements and their relationships and allows expressing the business logic of a specific” company (Osterwalder et al. 2005, p.3). In literature many different BM approaches exist which differ in the number of elements describing it (c.f. Gassmann et al. 2014, p.7; Osterwalder 2004, p.42ff.) and in the field of application (e.g. e-BMs (Dubossen-Torbay et al. 2002; Timmers 1998)), or entrepreneur’s BMs (Morris et al. 2005).

In the light of the above argumentation, the use of a BM approach is an appropriate and even necessary step for PEs to understand, analyze, compete, and cooperate with companies, but a typical approach for BMs in the public sector is still missing. In scientific literature as well as in practice-oriented literature many different BM approaches exist and are subject of various discourses in different contexts. One of these approaches is the BM navigator derived by Gassmann et al. (2014, p.7) with four elements: Customers,
value proposition, value chain and profit mechanism. This BM approach can be used for the analysis of a broad range of different companies. This point as well as the intuitive and simple usage is the reason for choosing the BM navigator as the basis for the adoption of a BM approach for PEs. The BM navigator gives a holistic view fulfilling the above-mentioned definition of BMs and provides a more abstract view than, e.g. the BM canvas (Osterwalder 2004). A more abstract view can be helpful to individually decide on the detailedness of the aspired analysis. Furthermore, the BM navigator implies a detailed initial analysis of companies’ environment and the permanent structured analysis of changes leading to necessary adjustments in the BM. In contrast to other approaches like the BM canvas by Osterwalder (2004), the BM navigator does not prescribe a "predetermined development direction" (Steinhöfel et al. 2016). Therefore, the modelling process can be designed according to the goals, which are pursued. Following the BM navigator, the modelling process of a BM for companies has a broader view and unites internal and external team members as well as a neutral moderator for workshops while other approaches only broach the issues of team diversity (Steinhöfel et al. 2016). The explicit involvement of external stakeholders in the analysis and design of BMs is very important for PEs as stakeholders especially in PEs often influence the BM elements to a considerable extent.

The BM navigator of Gassmann et al. consists of four interrelated elements. The first element of the approach is the customer, who is in the center and according to the authors “the very heart of every” BM (Gassmann et al. 2014, p.6). Especially when designing a digital BM, the “exceptional customer experience” based on change, e.g., due to megatrends and attitudes is one of the main drivers of value-add (Remane et al. 2017). The customers’ demand is addressed in the second element: the value proposition. The offered products and services are the key component of this element. The third element is the value chain. It includes all processes and activities, which are needed to transform the input factors into the final output as defined in the value proposition. The last element refers to the profit mechanism and includes the cost and revenue streams of a company. When considering all elements a holistic view of the BM is possible (Gassmann et al. 2014).

In the following, we discuss the existing approaches, which we identified in literature adopting the approach for PEs. In the paper by Micheli et al. (2015) the idea of adjusting innovative BMs for the public sector to promote technological innovation is discussed. The authors argue that PEs start adopting the concepts of BMs to improve the cooperation with companies and to foster innovations (Micheli et al. 2015). Based on the problem that in PEs innovation efforts often are not adding value or are not holistically implemented in the structure and processes of these PEs, Axelson et al. (2017) provide explanations from a BM’s perspective. The authors argue that “it is difficult to archive public sector innovations for societal challenges when the preconditions for business models are lacking” (Axelson et al. 2017) and identify “fragmented purchasing power, diverging incentives and unclear roles among relationships” (Axelson et al. 2017) as reasons for this. Overall, the authors underline that the BM approach is eligible for PEs, as the concept is uncovering the reasons why innovations in PEs have not yet been turned into rising revenues (Axelson et al. 2017). Kożuch and Jablonski (2017) also make the adoption of BMs for public management a subject of discussion. Based on the BM canvas (BMC) by Osterwalder (2004) principles for the adoption are discussed. Nine different groups of stakeholder in public management are identified and used to differentiate standard BMs from public BMs. Based on the analysis, the authors conclude that “it is crucial for public organizations to combine the mechanisms of creating higher order values, as well as to place a citizen at the center of attention as a key recipient of that value through the application of the concept of customer-centric orientation” (Kożuch and Lewandowski 2017). The authors further highlight the missing discussions of BM approaches for PEs and underline the necessity of BM approaches (Kożuch and Lewandowski 2017).

These examples provide evidence that the BM approach is already discussed for PEs to address problems, which occur due to the characteristics of PEs. Each of the papers analyze parts of the BM. While Micheli et al. (2015) and Axelson et al. (2017) discuss the value chain and value proposition of PEs, Kożuch and Jablonski (2017) analyze the stakeholders with their interests. With that, it can be concluded that the analysis and strategic development of PEs using the BM approach is appropriate and even necessary (answering RQ1), but current research focuses on single aspects or perspectives like technological innovations and customer-centric BM management. Therefore, we aim to close this gap and design a BM approach for PEs from a holistic perspective.
Development of a Business Model for Public Enterprises

In this chapter of the paper, we adapt the BM navigator considering the characteristics of PEs with each element of the BM navigator (Gassmann et al. 2014) before the BM approach for PEs is presented. As already indicated above, the clear identification of pure PEs and delimitation from companies is not always possible. Therefore, for many scientific research approaches, the authors simplify the reality by the assumption that a clear distinction of both kinds of enterprises is possible and suitable (c.f. Mühlenkamp 2015). To not exclude this knowledge from our analysis, we decided to also include the BM characteristics of companies while adapting the concept for PEs and their characteristics. This is the reason why the elements of the BM navigator are regarded from the companies’ as well as PEs’ perspective in the following based on scientific literature.

We start with the element customer. Due to different characteristics and influencing factors, the term customer is seemingly not appropriate for PEs. The relationship between stakeholders and PEs are much more diverse and complex than that of a “mere” customer and a company. That is why the term “customer” is not fully suitable for PEs. Therefore, we use the term stakeholder for this paper instead of customer like it is recommended by Brignall and Modell (2000). Referring to Freeman and Reed (1983) a stakeholder can be defined as “any identifiable group or individual who can affect the achievement of an organization’s objectives or who is affected by the achievement of an organization’s objective.” This definition expands the customer focus and includes all people who are interested in the value proposition of a PE or who are affected by it. Literature shows that different stakeholder groups for PEs can be identified and that the number of different stakeholder groups of PEs is larger than for companies (Zheng et al. 2018). Brignall and Modell (2000) mention three different stakeholder groups: funding bodies, provider, and purchasers. Funding bodies represent the interests of taxpayers. Their aim is to act and use resources efficiently with respect only to financial criteria. Providers, another group of stakeholders, include professional associations of PEs. In contrast to the aims of funding bodies, providers are strongly interested in the employees’ satisfaction and employees’ competence development. These interests are not necessarily in line with or even contrary to the efficiency improvements perused, e.g. by funding bodies of PEs. Both factors are positively correlated with the service provided to their purchasers and therefore it also influences the purchasers’ satisfaction (Brignall and Modell 2000). For PEs the state plays an important role as it holds two stakeholder roles: on the one hand the state acts as funding body, and on the other hand it acts as purchaser and through that provides public goods or services for the citizens (Milicz 2016). Purchasers and providers have to contract with each other as the purchasers provide the value for the target customer. Overall, the stakeholder groups probably have different interests. It is important to find a balance between the conflicting interests of the stakeholders (Brignall and Modell 2000; Zheng et al. 2018) although it may be difficult to satisfy all interests, as they are interlinked and sometimes mutually exclusive. For companies knowing the customer is as important as knowing the stakeholders for PEs and builds the basis of the BM approaches. In competitive markets, the customers decide on their own whether they want to purchase the products and services. For goods and services of PEs there is no voluntary choice as the government decides on the provision and how much tax is used to finance it (Moore 1995). The identification of the relevant stakeholders is important for the definition of the value proposition.

The second element of the BM is the value proposition. In companies, revenues usually measure the value, which is created through the production or provision of services. For PEs managers have to identify performance indicators that measure the “social outcomes”, which often can only be measured years after the consumption of the good or service provided by the state. The outcome may result in outcomes, which are noticeable at very different places and only in the context of societal and social aspects. Another alternative is to measure the customers or stakeholder satisfaction with the public services and goods. The measurement of the satisfaction is an indicator for the value created by the PE. This measurement might not equal, comply with and depict the underlying incentives of the state to offer the goods and services, as the incentives are of social or societal value (Moore 1995; Moore and Khagram 2004; Rolland 2015). The value proposition of companies and PEs also rely on innovation. Lee at al. (2012) distinguish between innovations in the public sector and innovations within companies. While PEs focus on service performance, companies reach for increasing competitive advantage in the markets (Lee et al. 2012). Therefore, the government ensures a broad access for the citizens by taking their needs and societal background into consideration (Milicz 2016). From an economic point of view, the provision of high quality goods and services to a broad group of recipients by the state or PEs is not always efficient. This is the
reason, why the state might also engage companies to manage the provision. The engagement of companies
does not free “the state from the responsibility to ensure that the tasks concerned are executed
professionally, cost-efficiently and effectively” (Milicz 2016). The value proposition of PEs is oftentimes
linked to regulations and laws influencing the provision of goods and services. PEs that are especially
affected are public utilities, transportation enterprises, metallurgy, and the heavy industry. These
constrains and provisions lead to a dominance of PEs in those markets resulting in low competition in the
market and in higher profits, which are often monopolistic (Zhang et al. 2014). This is also an important
aspect, which on the one hand differentiates the value creation of PEs from companies and on the other
hand has to be kept in mind for the following design of a BM approach.

The element value chain refers to the question “How is the value proposition created?” (Gassmann et al.
2014). The value chain builds the connection from the PEs to its stakeholders. As already described above,
it is sometimes more efficient for the state to delegate the provisioning of goods and services to other
companies than offering it directly to the consumer. This directly influences the characteristics of the value
chain. To enable an adequate provision, PEs enter into an public service agreement with a company to
ensure the provision of a good or a service representative for them (Milicz 2016). For the element value
chain the service level demanded by the stakeholders has to be achieved. Companies face high competition
in the markets, which leads to a constant quest for continuous improvements concerning “their operating
efficiency” (Zhang et al. 2014) by reducing the required resources. Zhang et al. (2014) underlines that
privatization of PEs’ goods or services is accompanied with increasing pressure as the PE enters product-
market competition. The competition may improve the profitability, output, and efficiency of the value
(Zhang et al. 2014). The value proposition and with that the value chain of PEs are characterized by strategic
considerations and orientations of the government as “the state gains ownership over strategic resources
that might be of key importance for the national economy in consideration of public debt, the stability of
the financial system, etc.” (Milicz 2016). Less competitive pressure characterizes the value chain of PEs.
The design of the value chain reflects the “nature of market dominance and low competition, resulting in
higher monopolistic profits.” (Zhang et al. 2014).

The fourth element of the BM is the profit mechanism. The characteristics of this BM element for PEs
considerably vary from the financial options of companies. Companies sell produced goods or services to
their customers to retain revenues. PEs gain revenues from the taxpayers through the operation and
through financial support by the state (Rolland 2015). This implicates that on the one hand PEs are financed
to a great extent by the state and on the other hand are generating revenue through fees, which are paid by
people using the service. The money provided by the state is refinanced by tax charges from the citizens.
For many publicly provided services, the citizens have to pay at least a share of the provision costs (Rolland
2015), so that the costs for the services of PEs are shared between the different taxpayers (citizens,
companies and PEs) and the governmental budget (Milicz 2016). For each PE, a fixed proportion of the
annual central budget is considered to cover the operating costs.

As briefly described above, the characteristics of PEs and companies are different. This is clearly noticeable
considering the profit mechanism. Furthermore, the state prevents PEs from having to go out of business
because of a poor financial situation (Zhang et al. 2014). By holding the major proportion, the state can
reach the defined goals. These goals of PEs are sometimes even contradictory and therefore the state has to
define, which interests have to be followed (Rolland 2015). This is especially important when the state is
not providing the services through PEs but through cooperation with companies that representatively offer
the services to the citizens. In this case the operating expenses of the company have to be covered by the
revenues generated through the goods or services (Milicz 2016).

**Business Model for Public Enterprises**

Based on the above-described characteristics and specifics of PEs, in this section the elements are conflated,
an BM approach for PEs is proposed and presented in figure 1 (answering RQ2). The figure shows an
extension of the BM navigator by Gassmann et al. (2014) as the outer triangle is added. It includes
characteristics of the different elements for companies as well as PEs. The latter are highlighted in grey.

As already mentioned before, the center of the BM approach build the stakeholders, which are referred to
as customer in the original model of Gassmann et al. (2014, p.7). Stakeholder and customers can be
distinguished by the fact that stakeholders of PEs are diverse including funding bodies, providers, and
purchasers while for companies only customer segments have to be identified. This differentiation has consequences for the proposed value. In a market-driven environment, customers follow their needs and desires and can decide whether they want to consume the offered products and services or move to one of the numerous competitors. Beyond customer satisfaction, the value proposition of PEs depends on the government and its regulations as the state decides which interests are to be followed. Furthermore, in contrast to companies, the services and products of PEs are often nonexclusive (see section 2.1). The characteristics of the element value chain of companies and PEs are similar: both activities can be outsourced to external partners. One main difference is that for PEs the market situation is better as there is less competition. The three described elements are strongly connected to the profit mechanism. For companies, it is important to focus on the willingness to pay of their customers, which depends on the created value for the customers also in comparison to competitors. PEs are financed by the state with tax revenues, but customers also have to pay fees for services, which often have to be made use of.

For organizations as well as for PEs the BM can have different forms and specifications. For example, some branches are stricter regulated by the government than others or some services can be chosen voluntarily like higher education while others are regulated by law like possessing an identity card. Therefore, it is helpful to consider the characteristics of PEs as well as those of companies when defining and analyzing the BM of a PE.

**Demonstration**

For the proof-of-use of the BM approach for PEs, we decided to conduct case studies. Our case study follows the understanding of case study analysis by Yin (2014). We decided to analyze three cases. To illustrate a broad overview of PEs and usability of the model, the case studies take into consideration different types of PEs and illustrate the educational public sector with Ludwig-Maximilians University (LMU) in Munich, Germany, the logistic sector with the Port of Hamburg, Germany) and, the administration sector with the smart city of Vienna, Austria, based on the respective internet presence of the PEs.

LMU is the university with the highest number of registered students in Germany excluding distance learning universities (Times Higher Education 2018). This is the reason why the university was selected for

---

1 Extension of the BM navigator by Gassmann et al. (2014), including characteristics for companies as well as PEs (highlighted in grey).
the case study analysis. Founded in 1472, LMU describes itself as “one of the leading research universities in Europe” (Ludwig-Maximilian University 2018) based on national and international university rankings. A medical center is affiliated to the university. The following paragraphs depict the four BM elements for LMU: The target stakeholders of LMU are the students, the state and additional outside stakeholders. The outside stakeholders are the excellence initiative, the German Research Foundation (DFG), the EU, federal organizations, and other external stakeholders (Ludwig-Maximilian University 2018). The interests of the target stakeholders are manifold and have to be matched. While the students are interested in knowledge growth and earning a university degree, the state and the excellence initiatives target the educational task and support the academic research contribution of universities. The DFG focuses on the academic contribution. Together the state, the excellence initiative, and the DFG also function as funding bodies of LMU. Further information on the purposes is missing for other external stakeholders. The providers of LMU are the state and the employees who can be divided into academic and non-academic fields. The value proposition of LMU is the provision of access for all citizens fulfilling the entry requirements like high school diploma or adequate job qualifications. Therefore, the service of universities is the provision of an excellent surrounding for learning, teaching, and research. The state regulates the design of study programs, examinations and the degrees. Providing money for specific research topics the state delegates the choice for a research direction to the university. Another value created by universities is the education of qualified professionals who are entering the labor market after having earned the degrees. An international network as well as the medical center characterizes the value chain of LMU. Furthermore, “LMU is a founding member of the League of European Research Universities (LERU) and has entered into strategic research collaborations with internationally renowned institutions such as Harvard Medical School, the University of California at Berkeley and the University of Tokyo” (Ludwig-Maximilian University 2018). Visiting professors and invited speakers of companies present the practical perspective of research topics and are a part of the value chain created by LMU. The use of the services of libraries and publishing houses is an essential requirement of universities’ value chain for students and researchers. The fourth element of the BM is the profit mechanism. LMU provides the amounts received by the different stakeholders on their websites. The state endowment is 64% of the total money. The total outside funding is 25%, which is divided into 5% from the excellence initiative, 8% by the DFG, 3% by the EU, additional 3% by federal organizations and others 6%. The operating expenses of LMU are 4% and for university constructions, a budget of 7% is additional provided. This percentage distribution of the financial structure of LMU is from the operating year 2017 and leaves the medical center out of the analysis (Ludwig-Maximilians University 2017).

The port of Hamburg is “one of the world’s most flexible, high-performance universal ports” (Port of Hamburg). It is managed by the Hamburg Port Authority (HPA) AöR, which is responsible for addressing questions concerning “waterside and landside infrastructures, shipping traffic safety, in-port railways, real estate management, and the business environment. It focuses on ensuring timely, solidly financed, and well-placed investments in the infrastructure that are in line with market demands, as well as assessing the demand of commercial real estate and providing locations for port-related businesses” (Port of Hamburg). As HPA describes itself as a public service institution (Port of Hamburg) and has social responsibility, it is one example for a PE. The target stakeholders of HPA can be categorized into the three introduced stakeholder groups: provider, purchaser, and funding bodies (see section 4.1). 1900 employees with their personal and professional characteristics and interests represent the providers. The city of Hamburg is one of the funding bodies. Furthermore, many different logistic companies (referring to street, rail, and waterways) are partners of the port of Hamburg. These companies represent the group of purchasers. As HPA is responsible for all business services concerning the port of Hamburg and “acts in a transparent and market-oriented way” (Port of Hamburg), the value proposition of HPA includes different aspects. It is responsible for the efficient, resource-saving and sustainable operation and the management of the port of Hamburg, and the provision of public infrastructure. The public infrastructure contains street, rail, and waterway including the secure provision, planning and maintenance of the operating structures (Hamburg Port Authority AöR 2017). To fulfill these value propositions, the value chain of HPA consists of a large network of international logistic companies in different fields. The competition with other international ports will increase in the next years as the terminal capacities in Western Europe will grow. Furthermore, the value chain of HPA is more and more characterized by the integration of development opportunities enabled through innovative digital technologies and solutions for the improvement of the current value proposition (Hamburg Port Authority AöR 2017). Considering the profit mechanism, HPA “acts according
to economic principles of business management and thus always strives for the highest level of organizational efficiency” (Port of Hamburg). HPA is financially supported by public investments.

The smart city of Vienna is an initiative of the city of Vienna with the general idea to increase the “quality of life for all Viennese citizens and to save resources through comprehensive innovations” (City of Vienna). The smart city is divided into three sections: the resource preservation, which focuses on the topics energy, mobility, infrastructure and buildings, the increase in the quality of life, taking into account social inclusion, participation, healthcare and environment, and innovations in education, economy research and technology (City of Vienna). As “the Smart City [...] initiative, which started in 2011, puts the people into the spotlight” (City of Vienna), the citizens are an important target stakeholder. The funding bodies of the smart city are the state, the government, and the European Union. Research agencies, companies and the citizens are purchasers as they support the smart city initiative by collaborating with each other and with the city agencies. The provider of the smart city is the city of Vienna. The value proposition is divided according to the three sections resource preservation, quality of life and innovations. Value is created by increasing energy efficiency and decreasing energy consumption, by reducing CO2 emissions and by supporting the construction of zero-energy buildings. The different stakeholders can benefit in various ways. While the citizens of the city profit from a cleaner living environment, the state is supported in reaching the environmental goals of the European Union (Vienna City Administration 2016). The quality of life is addressed by projects focusing on social inclusion and by improving the “health-promoting conditions of life” (Vienna City Administration 2016). The third section is innovation. With the smart city innovations are fostered and supported in order to on the one hand provide the above mentioned value proposition and on the other hand to establish an attractive research and economic hub in Vienna (Vienna City Administration 2016). All in all, with the smart city initiative the city of Vienna wants “to secure and further improve its ecological, economic and social performance” (Smart City Wien) and therefore “looks at a cross-section of the city, covering all areas of life, work and leisure activities in equal measure, and includes everything from infrastructure, energy and mobility to all aspects of urban development” (Smart City Wien). A monitoring of the smart city activities in 2017 provides an overview of the initial value proposition of the initiative. The value chain of the smart city of Vienna is characterized by numerous sub-projects. Each project addresses a specific aspect of the smart city initiative and therefore is an essential part of the value chain. The value chain is further characterized by the cooperation with different stakeholders of the smart city initiative. Information on the profit mechanism of the smart city of Vienna was almost not to be found. The initiative is coordinated by the smart city agency for the city of Vienna. This allows the assumption that the major financial means are provided by the city, but the budget for the smart city and the shares of different funding bodies are not documented on the websites. The smart city is co-financed by the European regional development fund.

Discussion and Further Research

The case studies provide first insights that BMs of PEs today show characteristics of typically public as well as those of typically private companies. E.g., the BM of the port of Hamburg possesses characteristics, which can be assigned to the public as well as to the private sector. This result highlights the importance to also take the specifics of BM elements for companies into account in the context of BM analysis for PEs. Table 1 sums up the main characteristics of our case study analysis:

<table>
<thead>
<tr>
<th>perspective</th>
<th>public enterprise</th>
<th>private company</th>
</tr>
</thead>
<tbody>
<tr>
<td>target stakeholder</td>
<td>identification of target stakeholders with different sometimes contrary interests (LMU, smart city)</td>
<td>customers: logistic companies (Port of Hamburg)</td>
</tr>
<tr>
<td>value proposition</td>
<td>broad access (LMU, port of Hamburg); regulations by the government (LMU, smart city, port of Hamburg)</td>
<td>customers can freely decide to use alternatives (LMU)</td>
</tr>
<tr>
<td>value chain</td>
<td>cooperate with partners (LMU, smart city, port of Hamburg); delegate parts of the value chain to partners (smart city, port of Hamburg)</td>
<td>higher competition (port of Hamburg, LMU); outsourcing of activities to partners (LMU, smart city, port of Hamburg)</td>
</tr>
</tbody>
</table>
As PEs have to cooperate and compete more and more with private companies, the necessity of defining a BM and the structured analysis of its elements increases. With this paper, we take a first step and provide an adapted BM approach for PEs, which can be used for further research. Our BM approach combines the characteristics of the BM navigator by Gassmann et al. (2014) with the characteristics of PEs identified in scientific literature. It allows for managers of PEs to better and more efficiently customize the BM approach to the characteristics of their enterprise, as many characteristics are already considered in our adopted approach. Thereby, the approach supports the understanding and analysis of the own value proposition and of the relevant relationships between different aspects of the BM. It can further support the cooperation with companies as the operating conditions are better understood by the PEs and therefore the preconditions for successful business cooperation are enhanced.

Our BM approach allows researchers to further research the effectiveness of the BM approach for PEs and it supports managers of PEs to analyze the value creation mechanisms of their enterprises. Furthermore, research should address factors of the BM approach, which improve the ability for quickly adapting to external disruptions and changes. For such analysis, a maturity model may help to determine the current business resilience degree in the context of PEs and their changing requirements due to digitalization. Systematic analysis of the adapted BM approach may further allow researchers to identify additional aspects and elements increasing the usability and adaptability of the BM approach for PEs or to suit the model for even more specific kinds of PEs and their characteristics that might also include more or less characteristics of companies. Another possible research direction is the analysis of the BM of publicly provided education especially amidst the increasing number of for-profit education providers. This is important to prepare universities for the digital transformation and the steadily increasing competition.

References

### Table 1. Results of the case studies

<table>
<thead>
<tr>
<th>Profit mechanism</th>
<th>Mainly financed by the state or government by tax revenues (LMU, smart city)</th>
<th>Partially financed by the state (port of Hamburg); generating revenues through consumers paying for performance (port of Hamburg)</th>
</tr>
</thead>
</table>

Twenty-fifth Americas Conference on Information Systems, Cancun, 2019


Yin, R. K. 2014. Case study research: Design and methods, Los Angeles, California: SAGE.
