Support of a Self-Service Business Intelligence Implementation - A Taxonomy Development

Masterarbeit

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Table of Contents

1   Introduction

Making fast decisions based on high quality data is essential for companies to be part in the future economy. Historical data, live data and market data are just some of many more information to be considered. Business Intelligence (BI) is a solution to handle the amount of data. Many literatures have appeared in recent years and the importance of BI increases continuously. Some years ago, a new form of BI has been introduced: Self-Service Business Intelligence (SSBI). This approach enables every company's employee to create analyses by his or her own and make data driven decisions based on these.

"Data is the new gold"[1]

Neelies Kroes, Vice President of the European Commission responsible for Digital Agenda 2011

In the past decade, IT functions increased in quality and quantity. In this context, many business processes became digital and the trend continues. During the 19th century, computers have been invented, which can be seen as the start of information technology (IT). The main challenge was to introduce this kind of technology to employees. This changes the way of working the first time. Instead of writing on a typewriter, a computer was now used. In 1990, the public got access to the internet. This development had changed the processes completely as communication, dataflow and information generation now became digital. Over time, many more functions have been developed, and more and more software has been introduced. Mobile phones enable everybody to be reachable and digital wherever it is needed. All this generates a huge amount of data. The more digital the world becomes, the more transparent it is. The disruption of data analysis is started according to Gartner Inc. (2018) in 2004. Any information and every digital movements are documented and stored somewhere. The future is to create value out of this data. Hence, the pressure and expectations for IT departments increase, as a result of increasingly high requirements.

For this reason, the aim of companies should be to work with the maximum of data as any new data can create new insights.

"This growth has been fueled by the declining cost of acquiring and storing very large amounts of data arising from sources such as customer transactions in banking, retail as well as in e-businesses, RFID tags for inventory tracking, email, query logs for Web sites, blogs, and product reviews. Enterprises today collect data at a finer granularity, which is therefore of much larger volume." (Chaudhuri et al. 2011, p.88)

Such tasks can be undertaken by BI tools. Seeing the importance of creating value out of data, BI tools might be essential for future businesses. As Böhringer et al. (2010) mentioned, data is not just the basis of strategic questions, nowadays it is the basis of operational tasks.

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[1] http://europa.eu/rapid/press-release_SPEECH-11-872_en.htm?locale=en, last access 20.11.2018

Therefore, almost every employee is in the need to access data. In addition to the increasing requirements for IT departments and time savings, Self-Service leads to a higher efficiency. Using SSBI is a competitive advantage nowadays - in the future, it might be impossible to stay competitive without utilizing SSBI (Schlesinger & Rahman 2015).

It must be stated that in the field of science there is a lack of research. There is no common definition of SSBI, no common categorization or else. Given the importance of SSBI for future processes within a company, a grounded understanding of the different concepts, not only for companies, but also for future research is needed. An independent categorization hence guarantees independent analyses in the field of SSBI.

Self-Service Technology (SST) is already known in companies and widely researched. But rather than most SST operate from company to costumer, SSBI operates within the company, executed by employees (Bani-Hani et al. 2017). An understanding of such field is essential for the implementation as internal processes are affected. Which tasks should be conducted by the IT, where does the Self-Service should be on focus? This understanding needs to be clear before a software or a tool is implemented. To create a common goal of highly efficient research, a general understanding of SSBI is required.

Against the background of the above explained topic, the present thesis concentrates on the categorization of Self-Service Business Intelligence. Companies are confronted with a huge variety of different SSBI tools and thus are facing the challenge of choosing a suitable one depending on their requirements. To ease this challenge, the present paper therefore is about developing a kind of taxonomy, which helps companies to pick the proper software for their SSBI intentions.

A taxonomy development as defined by Nickerson et al. (2013), is a structured analysis. Nickerson said that "classification of objects helps researchers and practitioners understand and analyze complex domains." (Nickerson et al. 2013, p. 336). Furthermore, as this paper aims to support the implementation of SSBI tools, the approach needs to be easily comprehensible.

To fulfil the mission defined above, chapter 2 initially deals with the theoretical principles of SSBI. This includes a definition of SSBI to set a base ground for later developments and analysis. In this context, the role of SSBI is explained, which raises the importance of such a tool.

Chapter 3 is the empirical part of the present paper and describes the research method. In this context, section 3.1 initially deals with an introduction into taxonomy development, because a good understanding of this topic is essential. Subsequently, the following sections deal with choosing the appropriate survey method for the planned research project, followed by a detailed description of the process.

Chapter 4 presents the taxonomy development. Based on a qualitative analysis according to Mayring (2002) data is generated for challenging existing iterations. This approach was not executed before hence it is introduced in this research. Finally, a taxonomy is conducted, which helps companies to firstly better understand SSBI-Tools as well as to select the appropriate tool for their individual requirements.

To round it up, the implications on implementations of SSBI is made in chapter 5. This is a guideline for companies and future research that deal with this field.

The conclusion summarizes the findings and an outlook to future research is given.

6 Conclusion

The present chapter represents the paper's conclusion while giving a short summary of the results. Finally, the paper concludes with on outlook.

6.1 Summary of the Results

The present paper's focus was on developing a taxonomy for categorizing SSBI tools, to support the aim helping companies in their selection of a suitable SSBI tool depending on their own demands.

In this context the present paper initially focused on giving a short introduction to SSBI, which included definitions and the differentiation regarding other terms such as BI. The literature review reflected the state of the science in the field of SSBI. According to the obtained results, the author stated that the field of SSBI has not yet been fully explored. For instance, a gap in research certainly existed regarding a categorization of SSBI tools. The present paper used two different data collection methods to gather data and information: On one hand, a literature review has been conducted, and on the other hand, a qualitative study in terms of standardized expert interviews has been conducted. By means of a coding system, the results subsequently have been used to develop a taxonomy consisting of six single iterations. After each iteration, the existing taxonomy has been adjusted to the new findings.

Finally, the taxonomy is as follows:

$T = \{D_1 \textbf{ Data Management and Governance}$

$D_1 = \{C_{1,1} Rights\ Distribution, C_{1,2}\ Mobile\ Access\}$

$D_2\ \textbf{Data Structuring}$

$D_2 = \{C_{2,1} Meta\ KPIs, C_{2,2} Meta\ Graphs, C_{2,5} Dimensions\ \}$

$D_3\ \textbf{Visualization}$

$D_3 = \{C_{3,1} Formating, C_{3,2}\ Predefined\ Formate\}$

$D_4\ \textbf{Reporting}$

$D_4 = \{C_{4,1} Presentation\ Funcionality, C_{4,2} Static\ Reporting, C_{4,3} Scheduling\ \}$

$D_5\ \textbf{Data Discovery}$

$D_5 = \{C_{5,1} Filtering, C_{5,2} Building\ Dashboards, C_{5,3} Manipulating, C_{5,4}\ Matematical\ Analysis\}$

$D_6\ \textbf{Communication}$

$D_6 = \{C_{6,1} Comments\ Function, C_{6,2} Rating\ System, C_{6,3}\ Chat\ Function\}$

$D_7\ \textbf{Connectivity}$

$D_7 = \{C_{7,1} Write-back\ Functionality, C_{7,2} Embedded\ BI, C_{7,3}\ Standardized\ Connectors\}\}$

Based on this taxonomy an evaluation system was developed. This enables companies to evaluate SSBI tools based on their own requirements. Furthermore, an individual approach was developed, which enables the users to set requirements individually.

The results as well as the entire methodology of the present paper has been critically examined in terms of possible limitations. In addition to that, implications for further research and implications on practice have been given. The present paper shows that categorizing SSBI tools is a complex task, with many different characteristics to consider. Thus, it clearly is not only a software that can be bought on the market and easily be implemented in a company so that everybody can use it without any problems. The present paper shows that implementing SSBI tools or rather the development of an SSBI environment requires a change of the company culture itself. Thus, SSBI tool implementations differentiate from conventional IT-projects and constitute profound changes for the company and its employees and require the creation of a solid data basis. As the present paper shows, the most important aspect in selecting and working with a suitable SSBI tool is educating and, in this way, preparing people. This is since SSBI enables and encourages entire departments and thus single employees to use data more efficiently and effectively.

An appropriate change management, a sensibilization regarding data security and the importance of data as well as involving of the employees can be seen as essential for a successful implementation of SSBI tools. As mentioned in the context of taxonomy development, a SSBI project does not have a fixed end. Instead, it is a dynamic process, which constantly requires feedback to be improved and adjusted.

The entire system's complexity needs to be kept as low as possible to overcome resistances and to achieve a higher degree of productivity. As stated in the discussion, special trainings will help companies to implement and use SSBI tools efficiently and effectively. Once these aspects will be considered, the use of SSBI tools will result in a significant added value, which meets the challenges of continually growing amounts of data and data sources. Hence, inefficient and complex structures can be overcome, and a sustainable competitive advantage can be achieved.

"Data is the new gold"[4]

Neelies Kroes, Vice President of the European Commision responsible for Digital Agenda 2011

SSBI is a tool to change the processing of data, the understanding of data, and therefore the way to make decisions. Making data valuable is the key to succeed in the future economy, hence SSBI is an important value creator.

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[4] http://europa.eu/rapid/press-release_SPEECH-11-872_en.htm?locale=en, last access 20.11.2018

6.2   **Outlook**

Making fast decisions based on high quality data is essential for companies to be part in the future economy. But not only the economy is speeding up in recent decades, also the information system undergoes fast changes, even disruption. As mentioned in the present paper future trends are already partly implemented. AI is one concept which significantly changes processes. This concept needs to be analysed in greater detail in further research. The question is if high investments to overcome the challenges of implementation are already paying off or if it would be smarter to wait until SSBI becomes Artificial Business Intelligence. Anyways, the process will change fast, thus trends always need to be considered. Additionally, the best practices implementation in the field of SSBI and the impact of such concept on the different categories need to be examined in future research.

Another trend in SSBI is Embedded BI. Nowadays various tools are implemented for different tasks. Embedded BI changes this, as analysis and views on data can be embedded in other tools. This might also have an impact on Self-Service and the impact on SSBI need to be considered in future research.

The evaluation system needs to be tested in further research on the acceptance of companies and on practicability. Also, the individual implementation of one tools needs to be analysed. This approach might even require a change of business model for the software developer. Nevertheless, the challenge to provide individual tools based on skills and needs could be overcome.

Finally, the present paper set a grounded understanding on the field of SSBI. Future research can build on this analysis as it eases the way of research. A focus on every impact of any category on the Self-Service should be set. As mentioned, a big impact on Self-Service might be due to "Data Structuring". But also, the "Data Governance and Management" is very important. Furthermore, best practise implementations should be examined for each category. Also, the research of Lennerholt (2017) can adopt this taxonomy to build up a systematic maturity model. However, the taxonomy is flexible and open for changes. Thus, this grounded understanding should continuously be challenged. Any new findings can easily be implemented hence create new insights for research and practice.