

METHODS AND METRICS FOR MEASURING THE SUCCESS OF ENTERPRISE SOCIAL SOFTWARE – WHAT WE CAN LEARN FROM PRACTICE AND VICE VERSA

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Abstract

With Enterprise Social Software (ESS) being increasingly used for internal communication and collaboration, an important question is how their success can be measured. In this paper we contribute to answering this question by investigating which methods and metrics organizations are currently applying for measuring ESS success. To do so, we have conducted 26 interviews with persons responsible for the deployment and use of ESS in their company. We found that measuring ESS success in the studied companies mainly focuses on the analysis of usage. We attribute this to the fact that ESS is primarily characterized by an abundance of user-generated content that can be easily analyzed. At the same time, companies still face difficulties in the evaluation of the business value of the platforms. We attribute this to some characteristics of ESS that we will discuss in this paper. Our study is supposed to provide a comprehensive overview of the methods and metrics applied in practice to measure ESS success.

Keywords: enterprise social software, success measurement, qualitative interview study

1 Introduction

For years now, Social Software like Facebook and Twitter has been enjoying a growing popularity in the private sector. Based on this extensive success, many companies have begun to discover the potential of such platforms for their internal communication and collaboration processes (McAfee, 2009; Stocker et al., 2012). Whereas many organizations have recognized the positive impact of Enterprise Social Software (ESS) (Riemer et al., 2012; Wagner & Majchrzak, 2007; Zhang et al., 2010), the measurable effects are still not obvious and easy to prove (Richter et al., 2013) as it may be the case with other information systems (IS). Notwithstanding, many IT executives are under pressure to demonstrate the benefits by appropriate methods and meaningful indicators. Platform owners and users would benefit from having means to evaluate the success of ESS, too.

The challenge to prove the success of an IS is not new, and there is a multitude of approaches for measuring and evaluating their benefits, like the DeLone and McLean (D&M) IS Success Model (DeLone & McLean, 1992) or the IS-Impact Measurement Model (Gable et al., 2008). At the same time, ESS has various characteristics which have to be considered for the success measurement. E.g. ESS helps users to easily create own content (Du & Wagner, 2006) and leads to a higher degree of networking of the employees (DiMicco et al., 2008; Richter & Riemer 2009). Thus, measures for these new forms of digital interactions are necessary. Moreover, ESS is mostly used to support unstructured tasks and can be characterized as malleable end-user software with no clearly a priori defined usage scenarios, which makes it very difficult to address or measure the business benefits (Richter & Riemer, 2013a). Because of these differences to other business software, it is hardly possible to adopt IS success measuring models for ESS without modification of the methods, key figures or even success dimensions (Steinhüser et al., 2011). Nevertheless, there are several studies and models that aim to measure the success of ESS. As we will show, those approaches differ according to the interests of several stakeholders: 1. *Management* is asking for a justification for the investment. The improvement compared to the previous state has to be assessed. 2. *Platform owners* want to improve the ESS and its use. 3. *Users* should be shown the added value of the ESS to perform tasks. While many investors (see 1.) are often only satisfied with reliable numbers, people responsible for the platform and users assess the value of a platform depending on how the platform is used or can be used. Thus, different perspectives result in different metrics of interest.

To get a better insight into the challenging task of measuring the success, the specific characteristics of ESS and the various stakeholders, we decided to examine in detail the application of success measurement in practice. More precisely, the research presented in this paper addresses the research question: *What kinds of methods and metrics are currently being used to measure the success of Enterprise Social Software?* In addition to a comprehensive literature review, we conducted 26 expert interviews. Our findings provide an overview of the methods and metrics applied to measure ESS success and support decision-making regarding the methods and metrics selection.

2 Related Work

2.1 Measuring success of Information Systems

While measuring IS success is an important and frequently discussed issue within organizations, there is no consensus on how this can be done reliably. Researchers have derived a number of models to explain what makes an IS successful. Thereby, various perspectives and system types have been taken into account (e.g. Gable et al., 2008, Grover et al., 1996, Seddon et al., 1999). Answering to a great number of publications, Larsen (2003) developed a taxonomy of antecedents of information systems success through surveying, synthesizing, and explicating existing work in the domain. One of the most prominent approaches is the Technology Acceptance Model (Davis, 1989), which explains why some

IS are more accepted by users than others. The underlying assumption is that perceived usefulness and perceived ease of use determine an individual's intention to use a system which serves as a mediator of actual system usage. The model's parsimony has contributed to its wide spread in IS research (Bagozzi, 2007). It has been continuously refined and expanded with one of the most major adaptation being the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). The UTAUT posits four constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) as direct determinants of usage intention and behavior. The variables within the TAM and UTAUT are typically measured using a validated, multiple-item questionnaire data for the use construct is usually measured through self-reported variables (Legris, 2003) and typically collected before adoption takes place. However, the usefulness and potential role of ESS for one's work practice cannot easily be determined and anticipated a priori due to its flexibility and lack of in-built purpose (Riemer et al., 2012). Since these theories do not account for this fact they are not applicable for explaining user adoption or the success of ESS (Richter & Riemer, 2013a).

Another dominant model in IS success measurement (Urbach et al., 2009) is the D&M IS Success Model (DeLone & McLean, 1992). The model provides a taxonomy of IS success originally consisting of six variables: system quality, information quality, use, user satisfaction, individual impact, and organizational impact. In a follow-up work, the authors revised the original model and added service quality as a construct (DeLone & McLean, 2003). The update addressed also the criticism that an information system can affect levels other than individual and organizational (Seddon et al., 1999) and replaced individual and organizational impact with net benefits. Despite the model's popularity, there are also some points of criticism, which led to revisions and extensions (e. g., Ballantine et al., 1996; Seddon, 1997). Some researchers have modified the model to evaluate success of specific applications others extended it, for example, to measure e-commerce systems success (Molla & Licker, 2001). Gable et al. (2008) have developed and validated a multidimensional survey instrument in the form of a questionnaire, which is based on the D&M Model but tries to counter some of the criticism. In conclusion, the D&M model has been widely used and adapted by IS researchers in order to understand and measure the dimensions of IS success. However, it has been found to be rather a useful framework for organizing IS success measurements than an instrument to measure the success of an IS in concrete organizational settings (e.g. Petter et al., 2012).

2.2 Measuring the success of Enterprise Social Software

Similarly to studies on IS success in general, many studies of ESS success measurement are based on the models introduced above. These studies either focus on single tools like blogs or wikis (e.g. Du and Wagner, 2006; Hsu and Lin, 2008; Trimi and Galanxhi-Janaqi, 2008) or investigate single aspects or success factors (e.g. Raeth et al., 2011). Thus, alongside with the above mentioned shortcomings these studies also miss a comprehensive, integrated view.

There are also several other studies that pursue new approaches: Lehner and Haas (2011) for example explain success factors in consulting behavioral models. They investigate the individual performance of users, but disregard the output. Their idea is to look at the organization as a whole instead of concentrating on one specific goal. They assume that the knowledge of the employees is represented by the "system of knowledge management" of a company. Muller et al. (2009) suggest measuring the impact of ESS by means of a metric called "return on contribution (ROC)". They assume that the use of collaboration tools is made in an appropriate and strategic manner. Therefore, the authors define a set of metrics that consider the creation and consumption of information as collaborative processes of employees. In conclusion, the ROC can be used to observe employees' usage patterns. However, it is no comprehensive success measure and it does not include different stakeholder perspectives. With their practice-oriented approach Cooper et al. (2010) develop a proposal for success measurement based on the perspective of use cases. The authors present measures of interactions on individual, group, and organizational level and combine them with a chronological background.

In conclusion, existing scientific approaches deliver first valuable insights into the success measurement of ESS and try to evaluate ESS from different perspectives. However, there is still a missing congruence of the organization's and user's benefits perceivable in most models. Moreover and even more important, these models focus predominantly on single aspects of success. Finally, they do not take into account concrete use cases and therefore lack applicability in practice.

Due to the necessity to measure ESS success, there are also some practical approaches. In a study of Keitt (2010) selected financial measures are used to show the impact of ESS. The study shows that employees benefit from the "ability to find and share information" and that ESS leads to "incremental gross revenue from new products and products brought to market faster". In another recent study Matern et al. (2012) demonstrate that ESS can lead to efficiency gains up to 90 percent. However, both papers and other examples lack a valid theoretical and empirical basis, and are rather indicators for the potential of ESS in practice than valid models.

2.3 Dimensions of measuring the success of Enterprise Social Software

As a first conclusion, apart from a few exceptions, studies on IS success are missing detailed success measurement methods and proposals for the collection of these metrics. In this regard, publications especially from the ESS area already go one step further and provide some specific methods for measuring the success (Cooper et al., 2010; Muller et al., 2009). However, ESS studies frequently focus on measuring the usage of ESS, or involve the usage as a main component in multilevel models. The particular importance of the usage can be traced back to the fact that compared to other IS, ESS is primarily characterized by an abundance of user-generated content and the participation of the users which makes it easy to analyze the user behavior.

These different approaches finally led us to distinguish between two main dimensions of ESS success measurement: *usage* and *business value*. Others have found similar subdivisions (Richter et al., 2013). As usage we understand the extent to which software is used. This includes the activity and participation on the Social Software platform. Business value means the economic added value of using the platform for the company in terms of cost and workload savings or revenue increase.

3 Methodology

To evaluate which methods and metrics for measuring ESS success are applied in practice, we have taken a qualitative approach by semi-structured interviews (Schultze & Avital, 2011). We have conducted 26 interviews with ESS experts from 24 companies between December 2011 and June 2012. The qualitative interviews allowed us to make an exploratory assessment of the methods and metrics (Spencer et al., 2003). Furthermore, it enabled us to identify relationships between the application of methods and used metrics, as well as an understanding of the general approach to success measurement. The selection of companies was not clustered according to certain industries, company size or other criteria. However, all of them are located in the German-speaking area (Austria, Germany and Switzerland) and have gathered practical experience in the application of ESS. The participants have been approached at conferences, exhibitions, in web communities or by personal recommendations. The number of employees of the companies is between less than 10 and more than 400,000. The spectrum of industries ranges from automotive through banks, insurance, (business) consulting, to energy, healthcare, and chemicals.

Prior to the interviews, we developed an interview guide to support the conversation with the interviewees (Bryman & Bell, 2007). The interview guide contained 32 questions in different categories. The main questions were: "Do you measure the success of your ESS?", "What kind of methods do you use in order to measure the ESS success?" and "What metrics are examined in the success measurement?" In addition, we asked four general question categories including questions about the person and the company, about the experience with ESS, about measuring ESS success and

about the influence of use on the success. This enabled us to get an idea of the participant's experience and simultaneously to detect different contexts of statements. The interview guide allowed a meaningful comparison of the interviews in quantitative terms and sufficient room for comprehensive statements and additional questions from the interviewer (Bryman & Bell, 2007). The interviews were conducted by telephone, one was held face to face. During the interviews, we adopted the role of neutral observers. We are aware this does not mean that we were unbiased; however, we aimed at gaining answers from different perspectives that were as frank as possible (Walsham, 2006). The interviews were recorded and had an average length of 35-50 minutes. One interview was not recorded at the request of the interviewee. In this case the interviewer has taken conversation notes which were subsequently approved by the interviewee. Since the interviews have been conducted in German, the used quotations in this paper were translated from German into English analogously (Regmi et al., 2010). We transcribed the interviews and subsequently coded the text documents. Thereby we categorized the different codes under the respective question. Additionally to classifying the codes into different categories of methods, we also counted their frequency. Although 26 interviews do not allow us to make a representative statement, they are a valuable indicator of the weighting by which we could obtain information about their importance.

First interim results have been discussed in a focus group of 10 participants composed of ESS researchers and practitioners responsible for the ESS in their company in a one-day-workshop (Krueger & Casey, 2009). The focus group confirmed the large number of different perspectives and stakeholders of the success measurement, and hence the wide range of different methods and metrics. This supported the distinction between different dimensions of measurement methods. After the final evaluation, the results were again discussed by a second group of three researchers, in order to reduce the subjectivity by the evaluator and interviewer (Spencer et al., 2003).

4 Results

Whereas the focus of this paper is on the methods, we want to start by providing a rough overview of the status quo of the general application of ESS success measurement. Contrary to our basic assumption that an evaluation of success is still hardly applied in practice, more than half (16 [n=24]) of the companies say that they measure the success. Most practitioners were aware that success measurement and the evaluation of the IT tools is very important (Quote of interviewee 15 (i15): *"Introducing Social Software just for the sake of software is really not enough, it's supposed to really stand behind a specific value. And I think to query, track and ultimately to consider this value for the company [...] are important factors."*). One interviewee sees it as a chance to take the needs of the employees seriously (i22: *"So when you measure the success of the tools, it means I take my staff and users seriously. I'm interested in what you are really interested in, what is working, what is not working, what you actually want and what should be different."*).

At the same time there are interviewees who consciously do not use a success measurement (8 [n=24]) (i08: *"We have just seen that the tools bring so much positive for the corporate culture, so we have seen no need to measure that in any way. [...] The benefits are simply evident."*), or do so only in a specific cost-benefit ratio (i18: *"How much do I invest in the measurement? The problem is simple: To have something ... to argue something waterproof, I need to invest in the measurement so much that I know the profit is almost gone."*). So, there were several barriers that limit the measurement. Beside much effort or the insufficient capacity and resources there are different privacy policies made by the work council. Other problems mentioned by the interviewees were missing or incorrect targets for using the ESS, the excessive complexity in the ROI calculation or the measurement on the whole, like limitations in the data collection or the lack of comparative data. It is therefore particularly interesting to find out what methods are really used just under these circumstances and which metrics are the subject of this evaluation.

During the interviews, we have deliberately not communicated any definition of success or success measurement of ESS. Therefore, in the analysis of the interviews different views of what success is

and how it can be evaluated showed up. Interestingly, it was not easy for the respondents to define the meaning of success (i13: “...*what is difficult in this issue, is first the definition per se: What is success? ... So right now we are still focused on the criteria for success, which we can measure.*”). Some participants saw success simply in the acceptance of the platform, which matches the participation of the users and the use of tools. Others regard the collection of usage statistics only as a supplement to more extensive analysis, and focus the success measurement rather on the added value to the organization.

4.1 Usage analysis

Besides the different viewpoints on ESS success, there are also different opinions on the point of when success measuring begins. While some of the interviewees consider database analysis as success measurement, other interviewees specify that they do not measure ESS success, but are only making database analysis (i06: “*We publish every now and again usage statistics [...]. But I would not call it success measurement - and certainly not in terms of the measurement of specific KPIs.*”). 20 of 24 of organizations collect usage statistics. Although not all participants see this as a meaningful success measurement (i11: “*Yes surely you can quantitatively measure the usage, but I think what matters at the end of the day, especially in Enterprise 2.0 projects - is what has changed qualitatively.*”), this method is of particular importance and indispensable in the evaluation of the usage. One reason for the frequent use is the possibility to simply collect the data at low cost. Nearly every Social Software platform provides analysis tools with which it is possible to track the activity of users in the form of traffic, page views and number of users, logins, or blog posts. Furthermore, this method meets the need for quantifiable success metrics of an IT manager.

Another method to assess the use-related success of the platform is the content and usage analysis, which is implemented through observation of the use and processing of usage data including the created content. The used metrics of the usage analysis include adjusted ideas (in the field of innovation management), intensity of collaboration (based on the “like” function) and the degree of users’ cross-linking. In two cases, success was not measured on direct metrics. In one case the content of an ESS platform was examined by a qualitative genre analysis in order to identify different use scenarios. Additionally, it was possible to show the benefits from each scenario through a multilevel benefit analysis. Another company has identified weak points of the ESS through a combination of user tracking and surveys. Furthermore, conclusions about the satisfaction of the users or the user experience are provided by user surveys. Very broad analysis of a wide range of users can be realized by surveys (i13: “[...] *that was also part of this survey, so very simple things: How satisfied are our users with the platform?*”). Similar metrics and results are also collected in user interviews, e.g. if more details are needed, e.g. the usage behavior or the validation of use cases. Of course, both surveys and interviews are of a subjective nature and are based on the users’ experiences.

As Social Software is primarily characterized by user-generated content, usage is particularly addressed in its success measurement (i08: “*Someone who uses the tool intensively will produce so much more benefit and also recognize more benefit than someone who does not use it. So those are certainly self-reinforcing cycles*”). In addition, the definition of objectives will decide whether to use more qualitative or quantitative methods (i25: “*It depends on the target horizon [...]. Using quantitative methods in a relatively new field of research is very difficult. Suitable for this are more qualitative evaluations.*”).

Table 1 shows the methods and metrics for measuring the usage of ESS.

Usage	
Method	Metrics
<i>Content and usage analysis</i>	adjusted ideas; intensity of collaboration; degree of cross-linking
<i>Database queries / Log file analysis</i>	no. of: blog-posts, community spaces, authors, attachments, visits, edits, log-ins, user, new users, messages per day, unique visitors, comments, blog followers, average comments on a blog or discussion forum, unique users and hits per time period, sessions, wiki pages per day, posts, readers of a post, praises per post; development of the use; posts with most readers; average time per user per visit; session time
<i>User Interviews</i>	user requirements for the platform; usage behavior; use case validation / user satisfaction with the processes or tools; review of the tool
<i>User surveys</i>	user satisfaction with the platform; usage types of the tool; frequency of use; applicability of the tools; knowledge of the users about the possibilities of the tools; satisfaction with the availability through the new tools; self-assessment of the affinity in using new tools; usability benefit

Table 1. *Methods and metrics for measuring ESS usage in practice*

4.2 Business value

The interviews revealed that many managers want to demonstrate the economic value of the introduction of the tools, but still have difficulties doing so (i16: “[...] *In ROI yes. So, this is very difficult for us. There is talk of reducing travel costs, speed of innovation, time to market, cost to market, etc. Unfortunately, we cannot yet.*”). However, there are companies that employ different measurement approaches and methods which address the business value for the organization. A wide range of metrics in this dimension were obtained via user surveys. These include the effort for using the tools, perceived business value through the tools, estimated money savings, increase of revenues, increased customer number, and the general perceived benefit for the business. Two companies collected the data via surveys, whereas in one case the economic output of use cases could be queried by doing user interviews. By process and usage analysis the time spent for reading, writing and answering blog posts was estimated in one case. With some additional assumptions or estimates one company calculated an ROI, a cost-benefit ratio or the opportunity proceeds of projects. More tangible data are based on calculations of travel and hardware cost savings. Calculations of the costs before and after the introduction of the ESS have been made by the accounting department. In addition, two interviewees indicated the number of ideas or awards by an output measurement.

At the data level, evaluating email traffic is a method for analyzing business value in the form of time savings. Companies do so by measuring the number of emails, the email frequency or the correlation of blog posts with the number of emails (i22: “*The number of emails has been greatly reduced, [...] the workload became less.*”).

In summary, we can see a difficulty and complexity in the evaluation of the economic value. There are methods that can be used for this purpose; however, these are often based on estimates or subjective perceptions. One reason is the use openness of Social Software (i25: “*The experience is that over time you will find whole new use cases that were not planned and which nevertheless generate a benefit.*”). Without a precise definition of use cases or application scenarios, it is very difficult to make a water-proof statement (i16: “*What we have found: It is not the only ROI, but it is case-related. So we cannot say we do a bit more Enterprise 2.0 now and then we have more business value, but it's really on a case-by-case basis.*”). In this context, it is also very important to have specific objectives (i25: “[...]”

the more it goes toward financial metrics, the more accurate you have to know the targets.”). Table 2 shows the methods and metrics for measuring the business value of ESS.

Business Value	
Method	Metrics
<i>Calculation of costs</i>	savings of travel costs; savings of hardware costs
<i>Imputed assumptions / estimates</i>	opportunity proceeds of projects; ROI; cost-benefit ratio
<i>Measurement of email traffic</i>	email frequency; no. of emails; correlation of email frequency and blog posts from one person
<i>Output measurement</i>	no. of implemented ideas; no. of awards
<i>Process and usage analysis</i>	time spent for reading, writing and answering
<i>User Interviews</i>	ROI of use cases
<i>User surveys</i>	effort for working with the tools; individual business value; ROI; saved money; generating new revenue; new customer acquisition; perceived benefits for the organization; business value

Table 2. Methods and metrics for measuring ESS business value in practice

4.3 Practice-oriented methods of ESS success measurement

Various stakeholders have different objectives of success measurement, and in this context different methods are used. In addition, for the platform owners the focus of ESS success measurement can also change with the maturity of the system (i25: “In the next phase we first really want to know if there is activity on it [the platform]. And if there is regular activity on it, then you are suddenly interested in how it can bring economic benefits. [...] interests also move the more mature a system is.”). On the one hand, the used methods evaluate the participation or the use of the tools and on the other hand cost estimates, time savings and process improvements. Here, various methods can be applied to evaluate usage and business value at the same time. Thus, user surveys, user interviews, and usage analysis are suitable for evaluating both dimensions (i15: “[...] for these soft factors, such as usability and also business facts, I do user surveys.”). Figure 1 shows an overview of the applied methods in practice based on the results of sections 4.1 and 4.2.

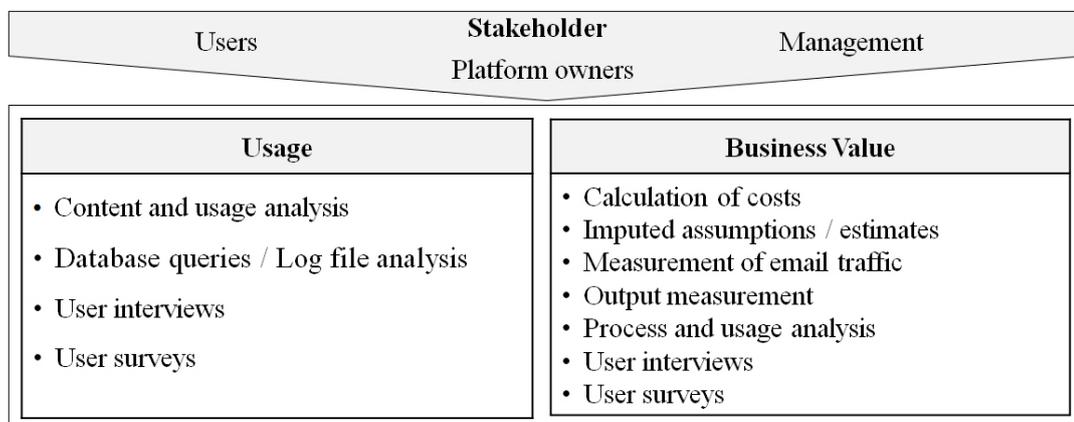


Figure 1. A practice-oriented set of methods for measuring ESS success

5 Discussion

During the study the hypotheses came up, that 1) the measurement of the activity is especially interesting in an early maturity stage of the platform, and 2) the focus shifts more to the business value. The influence of the maturity level of the application of metrics and methods has not been investigated in this paper and is an interesting aspect for future analysis. Furthermore, our results show that multi-dimensional models from literature are not applied by the interviewees. Although there are some companies that are on the way to a multi-dimensional measurement and try to study the correlation of usage with the business value, there is still a room for improvement.

The results of our interview study show that usage is of central importance for the success measurement in practice. Almost all participating companies collect usage statistics. Our results are in line with ESS success measurement approaches presented by Cooper et al (2010) Muller et al. (2009) and others who mainly concentrate on the usage of ESS. We attribute this to the fact that ESS is characterized by an abundance of user-generated content. As our analysis shows the simplicity of collecting usage data via analysis tools makes the measuring more attractive, especially for platform owners who want to learn of the adoption rates of ESS. This view is based on the hypothesis that participation in an ESS platform is voluntary and will only happen if users find benefits for their own work. ESS needs to be appropriated by its users in a particular context, thereby becoming part of different practices when compared across contexts (Richter & Riemer 2013b). Users need to explore, experiment with, and thus figure out how to “place” these services within their local work practices (Riemer and Johnson, 2012). Thus, usage is an important indicator for the success of ESS (from a platform owner’s point of view). However, these usage statistics must be considered in context, e.g. it makes a difference whether the platform supports a team working collaboratively on documents or a companywide community that exchanges ideas and experiences (Richter & Riemer 2013a). We suggest investigating ESS usage in various contexts further, to learn more on how (fast or deep) they are adopted.

Whereas our analysis shows that some companies are already experienced in gathering usage statistics, evaluating the monetary or economic impact was not easy to realize in practice. One reason for this is the measurement’s complexity due to the lack of processes definitions in specific use cases. Here again, it is important to consider the particular context. Many other software tools like ERP systems can be assigned to precise processes whereby the process output can be measured more easily. Thus, primarily in the area of business value it is important to be aware of specific objectives and use cases of ESS.

Our analysis shows that for collecting monetary metrics subjective estimates and imputed assumptions are often used. This subjectivity makes it difficult to obtain valid data especially in the business value dimension. More sound statements are made by an output measurement or cost calculations (reducing hardware or travel costs) which are based on accounting data. We recognized some particularities of measuring ESS success. Apart from collecting usage data, the measurement of email traffic represents an important method. The number of emails is seen as an indicator of information processing workload. But it has to be noted that moving communication to a social platform does not simultaneously mean a direct reduction of the labor costs, even if additional long-term effects (information preservation, transparency, etc) were observed. Our results show, that when it comes to measuring the business value, companies address monetary or countable metrics. However, as prior research in the field of IS and ESS success teaches, there do exist a number of different metrics which are not considered by practitioners at all. As Steinhüser et al. (2011) for example show, measures like decision effectiveness, learning, and serendipity do play a crucial role in ESS success measurement. These metrics mainly try to capture individual outcomes, which are, however, an important part of business value in the company as well.

6 Limitations

One limitation of the study is that almost only platform owners were interviewed. They are usually the ones who carry out the success measurement, other interest groups such as users or the management could bring additional aspects. Although some of them are in the management, we cannot presume a neutral view here. For the platform owners success is mainly represented by the users' acceptance, even if the investment has to be justified by meaningful metrics. The context of ESS supports many hedonic behaviors and interactions. Having not included the user's perspective might have led to ignoring metrics for assessing ESS success that addresses besides utilitarian also hedonic components of usage and business value.

In addition, it must be said that the choice of methods for collecting different metrics has to be discussed case by case. For example, in terms of business value users were asked via survey what their estimated money savings were or increases of the revenue due to ESS implementation. This data could also be collected, partially even in a more detailed way, by interviews or process analysis. However, interviews usually take more effort and thus costs, and have a lower representativeness than surveys. The choice of methods for collecting the respective metrics was not discussed or judged during the interviews and should be investigated in further studies. Furthermore, the question arises as to what extent the methods and metrics are complete and representative. The qualitative approach of 26 expert interviews helps us to gain an overview but does not allow us to make a representative statement. In addition, the identified methods of success measurement refer only to ESS which has already been launched in live operation. A success calculation before an investment did not take place and was not considered.

7 Conclusions

Our findings demonstrate that ESS success is measured by a variety of different methods and metrics in practice. We have recognized that there is no single definition of ESS success. Depending on the different stakeholders, there are different views of success which can be roughly divided into the dimensions usage and business value. Both, findings from the literature and the responses from various stakeholders show that these dimensions are distinguished and supplemented by a set of methods. This comprehensive overview is intended to give practitioners as well as researchers a scope of decision-making regarding the selection of methods and metrics. Furthermore, a bridge between theoretical models and practical application of success measurement is supposed to be formed. Although there are several models that have been validated, so far there has been no study that shows an overview of the different methods and metrics in practice.

We have noted that evaluating usage by usage statistics is of particular importance and is used by almost every interviewed company. This can be traced back to the fact that ESS is primarily characterized by an abundance of user-generated content and the participation of the users. Overall, we can say that analyzing usage statistics is an important indicator of ESS acceptance. However, their meaningfulness with respect to the business value requires additional interpretations. Furthermore, we found that measuring the monetary or economic impact of ESS is not easy due to a lack of detailed objectives and missing definitions of processes in specific use cases. Due to the openness to different use of Social Software the positive (or negative) effects cannot always be clearly assigned. However, as we have shown, there are several methods to approach business value such as cost calculation or process and usage analysis as well as estimates and imputed assumptions about the economic output.

In conclusion, we were able to show that ESS success measurement is an important topic for companies. Apparently, this challenge is taken more seriously in practice than we have assumed. In spite of various barriers, the majority of participating companies at least try to measure how their ESS contributes to the success. The relatively small sample size in the study obviously limits our ability to draw representative conclusions. Therefore, we recommend further research in terms of a quantitative

study. Finally, in order to further develop our results towards comprehensive guidelines, we plan to test and evaluate the findings in practice.

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