Discussion Paper

The Business Alignment of Social Media Analytics

by

Dominikus Kleindienst, Regina Pfleger, Manfred Schoch

THE BUSINESS ALIGNMENT OF SOCIAL MEDIA ANALYTICS

Complete Research

Kleindienst, Dominikus, FIM Research Center, University of Augsburg, Augsburg, Germany, dominikus.kleindienst@fim-rc.de

Pfleger, Regina, FIM Research Center, University of Augsburg, Augsburg, Germany, regina.pfleger@fim-rc.de

Schoch, Manfred, FIM Research Center, University of Augsburg, Augsburg, Germany, manfred.schoch@fim-rc.de

Abstract

Many companies have realized the immense potential of Social Media (SM) insights and have started to use concepts of Social Media Analytics (SMA) to reveal them. However, despite the importance of SMA, executives frequently hand off the topic to IT departments, instead of being actively involved in the business alignment of SMA. While existing SMA literature frequently identifies this need, it only addresses individual steps of the business alignment rather than suggesting comprehensive approaches. In order to contribute to the scientific discussion, we adapt a framework from the requirements engineering field to structure the field of action and enable decision-makers to define the SM insights beneficial to their individual goals. To help practitioners with the application of our work, we show a practical example of how to use the framework, and present possible SMA concepts based on current literature that can be used to collect the required SM insights.

Keywords: Social Media, Social Media Analytics, Requirements Engineering, Business Alignment

1   Introduction

In recent years, the popularity and usage of Social Media (SM) has risen tremendously. As customers write reviews on websites of online retailers such as Amazon, use online service channels on Twitter, or discuss their latest purchases with their friends on Facebook, they create an information-rich, free, and unlimited well of business insights. The big players of SM platforms, such as Facebook, Twitter and YouTube, generate vast amounts of data every minute (Stieglitz et al., 2014), with a growth rate that easily outperforms traditional media sources (Hennig-Thurau et al., 2010). Most companies have realized the immense potential of the insights that are inherent in this huge amount of data. Thus, they have started to use different analytical concepts such as text mining or sentiment analysis, subsumed as Social Media Analytics (SMA), in order to extract the desired information. This trend is exemplified in a survey conducted by Deloitte in which 94% of the 2,545 executives questioned claimed that their companies monitored or listened to social data at least to a small extent (Kiron et al., 2013). At the same time, however, as the so called *digital natives*, members of the generation raised using digital technology, are not yet part of executive boards, one can observe a certain lack of understanding at management level, resulting in reserved behavior regarding the handling of SM (Kietzmann et al., 2011). Many executives are simply overwhelmed by the vast amounts of available data. As a result, many companies tend to pass on the responsibility for SMA efforts to their IT departments.

However, without proper business alignment, it often remains unclear what purpose SMA reports are supposed to serve and exactly what information is desired. Consequently, management reports are built around data that is easy to collect, rather than data that is significant for success (Rockart, 1979). This

observation is congruent with von Wangenheim (2013) who stated that the current development of SMA is comparable to the beginnings of Customer Relationship Management (CRM), where IT departments took over the companies' efforts and focused on topics like how to collect and store data, rather than on the more important aspect of what to do with it. Therefore, even though SMA has already been identified as an area that holds great potential for companies, executives still lack the expertise or suitable structural guidance on how to integrate these efforts into their own business strategy. To better utilize this new information-rich resource, decision-makers need to align SMA efforts with business goals, specify their requirements, control the outcomes they intend to achieve, and allocate resources to those SMA efforts that are relevant for a company's success. Thus, in accordance with the practices of value-based and customer-oriented management, the alignment of SMA and the overall business goals is crucial (Gilfoil, 2012; Kietzmann et al., 2011; Kurniawati et al., 2013). However, a framework which matches SMA concepts with its different business purposes is still missing (Stieglitz et al., 2014).

Therefore, the aim of this paper is to support companies in aligning their SMA efforts with their business goals using a structured and transparent approach. For this purpose, we adapt a framework by Munro and Wheeler (1980) from the area of requirements engineering. First, we break down a company's business goals into critical success factors (CSF), as they provide a higher level of detail. This enables the identification of information requirements needed to make well-informed decisions. We then match these requirements with appropriate SMA concepts used to extract the required information from SM. Second, we instantiate the framework by providing examples for business goals, SM success factors, and corresponding SMA concepts based on the findings of recent SM research publications. In summation, we provide four research contributions: First, we introduce requirements engineering to the field of SMA. Second, we examine how the perimeters of requirements engineering have changed with SMA. Third, we help structure the field of action for executives less familiar with SMA. Last, we provide guidance for the application of the framework in a practical setting.

Our paper follows the applied concept research approach as classified by Alavi and Carlson's (1992) framework of MIS research. Accordingly, the remainder of this paper is structured as follows: In Section 2, we address the problem context and refer to existing literature related to the business alignment of SMA. The applied framework of Munro and Wheeler (1980) and its adaption to the context of SMA are introduced in Section 3. In doing so, we provide a link between SMA concepts and their business purposes. We further demonstrate the application of the framework through examples based on existing literature in Section 4. In Section 5, we discuss limitations and point out future research topics. Section 6 concludes the paper.

2 Problem Context

Considering the vast amount of publicly accessible information (Hennig-Thurau et al., 2010), it is crucial for companies to know which SMA efforts are conducive to their business goals (Gilfoil, 2012; Kietzmann et al., 2011; Kurniawati et al., 2013). However, as companies tend to put their IT departments in charge of SMA efforts (von Wangenheim, 2013), they may end up with a lack of business goal alignment. Important business goals have been identified in an international survey by Hofstede et al. (2002) and include for example: long-term profitability, reputation of the business, innovation, or responsibility to society. The application of SMA efforts can contribute to these goals in many ways. For example, the identification of customer outrages on SM and the analyses of brand reputation can help to better understand and improve a company's reputation (Kaske et al., 2012). Furthermore, the collection of customer insights about new products and other market trends can, for instance, support innovative product design.

In general, SMA efforts include the application of concepts, tools, and frameworks "to collect, monitor, analyze, summarize, and visualize SM data, usually driven by specific requirements" (Zeng et al., 2010). This view is also widely congruent with the SMA definitions of Yang et al. (2011), Sinha et al. (2012), and Grubmüller et al. (2013). Concluding from these definitions and in line with Holsapple et al. (2014), SM data can not only be used for customer-oriented analyses, but also for analyses regarding other stakeholders such as employees, suppliers, retailers, competitors, or regulatory bodies. In light of these

definitions, SMA has to be clearly distinguished from active Social Media Engagement (SME), which is using SM as a direct channel for communication and interaction with the customer (Reinhold and Alt, 2011). These SME efforts, such as SM advertising campaigns (Larson and Watson, 2011), are already well established among the Fortune 500 companies (Culnan et al., 2010). In contrast, it is more difficult to derive value from SMA efforts, as collecting data solely for the sake of collecting data, and without specific goals, is a waste of company resources. Thus, in order to generate business value and to be in line with established practices of value-based and customer-oriented management, resources have to be allocated only to those SMA efforts, which are aligned with the overall business strategy and business goals (Gilfoil, 2012; Kietzmann et al., 2011; Kurniawati et al., 2013). In order to do so, SMA efforts must not be left solely under the control of IT departments, but also need the thorough attention of a company's management.

In this process, research can provide guidance in order to enable companies to determine their needs in a structured way and derive business value from their SMA efforts. In this context, Mandviwalla and Watson (2014) focus on the development of SM strategies, both for SMA and SME. Furthermore, Kietzmann et al. (2011) and Kasper et al. (2012) each propose approaches, which help executives understand and categorize SM activities, and also help identify SM specific strategies or goals. Kaske et al. (2012) present a framework that supports executives in measuring the value generated by SM efforts, by connecting them to five generic SM benefits. However, none of these approaches contain the explicit alignment of SMA efforts to the individual business goals of a company. For SMA, many research contributions demonstrate concrete analytical concepts and show how these generate business value (e.g. Asur and Huberman, 2010; Kaiser and Schlick, 2011; Rosemann et al., 2012; Seebach et al., 2012). In doing so, these authors draw connections between the use of SMA and the respective goals of their individual concepts. However, they do not suggest matching them with a company's overall business goals. Another approach that focuses solely on SMA is proposed by Kurniawati et al. (2013), who gathered different SMA capabilities from 40 practitioners' success stories. At the same time, benefits of these capabilities are identified; the authors extend upon their research in a second publication with the introduction of a framework that draws a connection between motivations for the use of SMA, SMA capabilities and the resulting business benefits (Bekmamedova et al., 2014). While their approach tries to structure and outline how SMA can generate business value, the absence of a direct link between the motivations (goals of SMA efforts) and the resulting benefits requires in-depth knowledge of SMA and its corresponding benefits. Once again this approach does not provide sufficient guidance on how to align SMA with the overall business goals in a way that can be easily understood from an executive's perspective. In summation, there are several approaches in literature which provide an overview of SM efforts as well as SM specific strategies and goals. These approaches cover SM in general or focus on either SMA or SME respectively. However, none of the approaches provide specific guidance on how to align SMA efforts with a company's business goals. In order to fill this gap, we propose a framework that supports companies in aligning their SMA efforts with their business goals in the following section.

3 Framework for the Business Alignment of SMA

In accordance with the concept of value-based management, it is crucial to align a company's SMA efforts with its business goals and to only perform analyses that are goal-oriented. Therefore, we use an adapted framework from the field of requirements engineering that helps decision-makers define their information requirements by breaking down a company's business goals into more specific CSFs.

The framework has its foundation in the field of requirements engineering for analytical information systems and is used, for instance, for internal Business Intelligence Systems. In contrast to transactional systems, analytical systems are used to support decisions, which are unstructured and greatly influenced by the individual decision-makers' needs (Stroh et al., 2011). Therefore, in order to determine the information requirements, it is not sufficient to simply analyze business processes but rather to use demand-driven approaches (Winter and Strauch, 2003). For that reason, decision-makers need to be involved in the process. Because many insights collected with SMA are used to support decisions (Zeng

et al., 2010; Holsapple et al., 2014), this consequently also applies to the context of SMA. In general, three aspects influence the information requirements of decision-makers: information demand, objective information requirements, and information supply (cf. Figure 1).
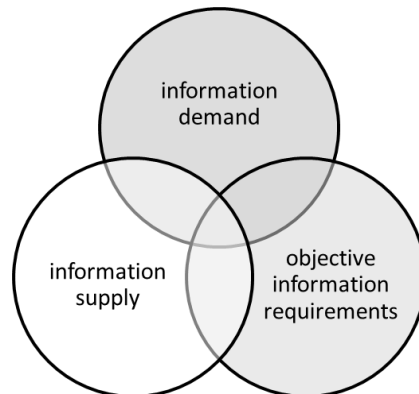

Figure 1. *Traditional Influences on Requirements Engineering (based on Winter and Strauch (2003), and Picot et al. (2008))*

Information demand can be defined as the information that the decision-makers inquire about, i.e. what they want to know. The objective information requirements represent the information that is actually and objectively relevant to fulfill the tasks at hand. The third influence is information supply, which represents all the information that is available to the analytical system. Traditionally, requirements engineering is based on information demand and is guided by current and future information supply in order to make sure that the relevant data can be extracted (Winter and Strauch, 2003).

With the emergence of SM, however, data streams are growing enormously (Andriole, 2012). The availability of increasing amounts of publicly accessible data thus changes the perimeters of requirements engineering in such a way that the restriction of information supply has diminished significantly (cf. Figure 2). It is no longer sufficient or even possible to simply sort through a limited internal supply to find the required information, as with traditional requirements engineering. The new problem is to define the relevant and goal-oriented information, before it is collected. Therefore, it is increasingly important to specify the required information needed to make well-informed business decisions.
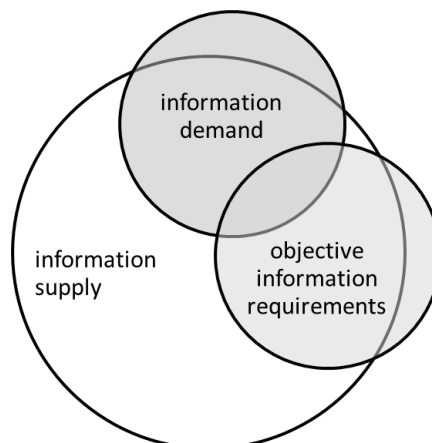

Figure 2. *Influences on Requirements Engineering with the Emergence of SM (own illustration based on Winter and Strauch (2003), and Picot et al. (2008))*

To support decision-makers in aligning their SMA efforts with their business goals and thus define corresponding information requirements for SMA, we suggest the adaption of the framework of Munro

and Wheeler (1980). This framework helps decision-makers break down a company's business goals into CSFs. Working with CSFs provides a level of detail that allows for the identification of information requirements needed to make well-informed decisions. In doing so, Munro and Wheeler's (1980) approach helps define the information requirements relevant to a company's overall success and thereby ensures that the selected SMA efforts are aligned with its business goals (Gilfoil, 2012; Kietzmann et al., 2011; Kurniawati et al., 2013). With this structured top-down approach, the framework creates transparency by breaking down the business goals into smaller entities such as CSF. It structures the field of actions and helps executives to better understand the relationship between their business goals and SMA efforts, while effectively removing possible reservations about the new media at the same time. To enable the use of this framework in the context of SMA, we adapt the following levels of the framework. First, we introduce a fifth level, that matches adequate SMA concepts to collect the relevant information requirements. Second, we add metadata that has to be specified in order to fully define the information requirements in a SM context. Third, we only use and suggest CSFs that can be supported by SMA.

Our research follows the well-established dimensions of Pohl's (2011) requirements engineering framework, published in the English language by Pohl and Rupp (2011), with its core dimensions: *elicitation*, *documentation*, and *consolidation.* The framework's relevance for researchers and practitioners was verified in an extensive requirements engineering state-of-the-art analysis by Stroh et al. (2011), who also conducted a survey amongst practitioners in their publication. Our framework supports the *elicitation* and *consolidation* process by providing a structured approach that allows for redundant information requirements to be identified. As part of our guidelines for the application, we provide a list of SM specific metadata that helps with the detailed *documentation* and specification of the relevant information requirements. In Section 5, we further evaluate how we address the individual dimensions in the context of SMA in general and in our research in particular.

In the following paragraph, we present the selected framework and explain the general approach as shown in Figure 3.

| I Business Goals | n … n | II Business Unit Goals | n … n | III Critical Success Factors | n … n | IV Information Require-ments | n … n | V Social Media Analysis |

Figure 3.   *Levels of the Framework for the Business Alignment of SMA (based on Munro and Wheeler (1980))*

The business goals of a company are the starting point of this process. These goals are usually high level and abstract, as they apply equally to all efforts of a company. Examples of potential business goals, like long-term profitability, were mentioned in Section 2. As a next step, companies need to identify the business units that can possibly benefit from SM data. This can be marketing, sales, and service - the operational processes of CRM - as they all interact with the customers, who produce a large portion of the SM content. But also units like research and development (R&D), human resources, and public relations (PR) can possibly benefit from SM insights such as customer reviews, brand perception, or other stakeholder feedback (e.g. Culnan et al., 2010; Mandviwalla and Watson, 2014). Subsequently, the identified business units define their own individual objectives (II) that derive from the respective business goals (I). In the context of their SM return on investment framework, Kaske et al. (2012) have recently identified a number of potential business unit goals (II) that can be supported by SMA insight, such as higher reach, higher retention, better stakeholder communication, and outrage avoidance. Business goals and business unit goals can be in *many-to-many* relationships, meaning that multiple business units can pursue the same goals (cf. Figure 3). For example, both marketing and service might work towards higher customer retention. The third step of the approach is to determine the critical success factors (III) vital to the success of the respective business units (Munro and Wheeler, 1980). While business goals represent the end point that an organization aims for, CSFs are areas in which high performance is necessary to ensure those goals are reached (Rockart, 1979). Hence, a business unit's

CSFs should receive constant attention from management and their performance needs to be measured and reported (Munro and Wheeler, 1980). With all CSFs identified, executives can then determine their information requirements (IV) to make well-informed decisions in the respective areas. In order to extract this required information from SM, suitable SMA concepts have to be applied (V).

4 Guidelines for Application

In an effort to support practitioners with the application of this framework in the context of SMA, we extracted detailed examples from current literature and provide detailed guidance for its different levels. Subsequently, we demonstrate the application of the framework, by breaking down a particular business goal into the suggested levels and propose specific SMA concepts that match the identified information requirements.

Business Goals (I) are individual goals that most companies establish and follow, for example through their strategy statements (Munro and Wheeler, 1980). These goals are highly dependent on a company's philosophy and leadership style. We assume that these goals are already established for most companies and it is not within the scope of this paper to assist with that process. Business unit goals (II) might need to be derived from the higher level business goals (I). Munro and Wheeler (1980) suggest to do this as part of a workshop with executives and the respective business unit subordinates. The contribution of this paper is not to assist with the establishment of business goals, but to connect them with SMA in a value-generating way.

CSFs (III) can be defined for different hierarchical management levels (Rockart, 1979) and can therefore differ significantly depending on the respective use case. Rockart (1979) developed CSFs on a CEO level that include items such as market success, company morale and image on finical markets. Mendoza et al. (2006) on the other hand, gathered CSFs for the implementation of a CRM Strategy. Their findings include senior management commitment, information systems integration, and sales automation. In our research contribution, CSFs are used in a more specific way and resemble the first level in which the application of the framework allows for a connection to SM. There are numerous generic CSFs that influence higher sales, such as price, or sales personnel. However, for the business alignment of SMA, we focus only on those CSFs that can be supported in a SM context. CSFs with implications for SM can be derived from existing literature such as Kurniawati et al. (2013), Malsbender et al. (2013), and Rosemann et al. (2012). A generic, but largely comprehensive list was created by Rosemann et al. (2012) for the context of CRM and is shown in Table 1 along with the respective business units involved.

CSF	Examples of Business Units	Description
Customer selection	Marketing Sales Service	Focus on most profitable customers. Customer attributes are analyzed to form market segments and customer segments.
Managing loyalty and customer profitability	Marketing Sales Service	Customer segmentation helps to establish an effective loyalty program. To maximize profits, customers in each segment may be approached individually.
Optimal allocation of resources	Marketing Sales Service	Efforts need to be focused on customers that are most profitable. The right mix of different contact channels has to be identified, along with an adequate contact frequency.
Pitch the right products or services to the right customer at the right time	Marketing Sales R&D	Deliver sales message to customers that will likely make a purchase in the near future. Requires extensive information about customer's preferences and current situation. The promoted tailored products or services have to suit the customers' needs.

Preventing customer attrition	Marketing Sales PR & risk R&D	Information about the past and current product or service satisfaction, and competitors is required to determine the probability of customer defection. Decisions on whether, when, and how to intervene can be made.
Managing multi-channel shoppers	Marketing Sales Service	Includes channels for contacting the customers, channels for searching product information and purchasing, and channels for product and service delivery. Requires information on the channels preferred by individual customers.
Acquiring profitable customers	Marketing Sales	Includes long-term relationships to both current and new, potentially profitable customers. Customer information like shopping history, product preferences, and purchase intentions is needed to decide if investments are beneficial.
Referral marketing strategy	Marketing PR & risk	Save customer acquisition and retention costs. Referral strategies include electronic Word-of-Mouth. Information from SM is essential in this context.

Table 1.   Examples of CSFs in the Wider Context of CRM and the Relevant Business Units (based on Rosemann et al. (2012))

Based on the identified relevant CSFs, executives are now able to determine their information requirements. This broad category can be subdivided through the use of established classifications to support further specification of the relevant requirements. Pohl and Rupp (2011) point out that there are several standardized requirement classifications for example from the International Organization for Standardization. For the identification of metadata for information requirements in the context of SMA, we follow Pohl and Rupp (2011) and use their requirements classification criteria, which differentiate between *functional requirements*, *quality requirements*, and *constraints*. Pohl and Rupp (2011) define a *functional requirement* as "a requirement concerning a result of behavior that shall be provided", while a *quality requirement* is defined as "a requirement that pertains to a quality concern that is not covered by functional requirements". Finally, a *constraint* is "a requirement that limits the solution space beyond what is necessary for meeting the given functional and quality requirements" (Pohl and Rupp, 2011). In Table 2, we derive metadata of possible information requirements in the context of SMA and give a short description, based on these classifications. For clarification on the application of the metadata, an example is given on how the requirement "customer profile information" can be defined.

Requirement Type	**Metadata**	**Description**	**Example for:** *customer profile information*
Functional requirements Which market areas are objects of SMA efforts?	Customer segments	Identification of customer segments, which need to be analysed	Users interested in sports Age: 20 to 30 years
	Source	Identification of the appropriate sources and (SM-) platforms in order to reach the targeted users	Twitter, Facebook
	Language	Depending on the targeted users, a decision on the languages has to be made	English, French, German
	…	…	…

Quality requirements Which quality of information is needed? How are data and information used after the analysis?	Technical data quality	The relevant dimensions need to be identified (timeliness, credibility, completeness, etc.)	Timeliness: data not older than one month
	Source exclusion	Besides target group, relevant sources and platforms also depend on the needed data quality	No source exclusion due to quality demand
	Granularity	Concerning the intended use of analysed data a decision on invested effort and the granularity of targeted data has to be made	individual customer data (instead of accumulated segments)
	Standardisation	In case of defined reporting cycles, standardized and reproducible analysis processes should be implemented	One-time analysis
	…	…	…
Constraints Which limiting issues need to be considered when analysing data?	Legal	Storage of certain combination of data might be prohibited by national jurisdictions	Only users who follow or like the company's SM presence
	SM bias	To which degree SMA data is sufficient in content or has to be complemented by offline data	Insights do not allow for generalization (as company also has offline customers)
	…	…	…

Table 2.   Examples of Information Requirements Grouped by Requirement Type (based on Pohl and Rupp (2011))

Essentially, as exemplified in Table 2, *functional requirements* mainly include the detailed specification of the relevant information requirements, e.g. SM platforms and target groups. The needed quality of these objects in terms of their intended use or granularity for instance are defined as *quality requirements*. Regarding *constraints*, the most solution space limiting requirements in the context of SMA are data privacy issues.

Once the information requirements are defined as described above, adequate SMA concepts need to be matched in order to extract the required data from the specified SM platforms. Due to the detailed specification of the information requirements, this operational step does not need to be performed by executives. This provides an advantage compared to other frameworks, such as Kurniawati et al. (2013), as executives do not need extensive knowledge of SMA in order to apply our framework. A selection of possible SMA concepts with their respective purposes is provided in Table 3.

Social Media Analysis	**Description**
Influencer analysis	Identify key influencers or communities that contribute to a specific topic of interest
Trend analysis	Monitor and compare number of posts on a specific topic over time to identify emerging topics

Sentiment analysis	Helps determine the sentiment of certain posts (positive, negative or neutral) and categorizes them accordingly
Demographics and profiling analysis	Collect static profile information from fans and followers, or other actors that generate content
Insight mining	Further analyze and screen collected posts to extract customer intentions and preferences
Customer segmentation	Use profile information to segment customers for more individual offer management and marketing campaigns
Marketing campaign analysis	Monitor and analyze posts about marketed products or brands to determine the impact of marketing campaigns
Market trend analysis	Monitor market related posts to identify emerging innovations such as new technologies or services
Event detection	Identify events through peaks in number of mentions per time period
Crisis analysis	Monitor and analyze high concentrations of posts with negative sentiment on specific topics (e.g. products, brands…)
Competitive analysis	Monitor and analyze posts about the competitors' products and brands
Brand analysis	Analyze the customers' perception of own brand

Table 3.   Social Media Analysis Concepts (based on Kasper et al. (2010), Kurniawati et al. (2013), Malsbender et al. (2013))

To bring together all levels of our framework for the business alignment of SMA (cf. Figure 3), we provide an example for its application based on a CRM specific business goal (cf. Figure 4). A common business goal in CRM is to maximize customer equity (cf. Level I in Figure 3), which is defined as the total of the discounted lifetime values of all customers (Rust et al., 2004). The sales unit, for example, can contribute to this business goal by accomplishing *higher sales* (cf. Level II in Figure 3) (Kaske et al., 2012), i.e. increase the customer lifetime value of existing customers and/or acquire new customers. An adequate SM-specific CSF to generate higher sales could be *pitching the right product to the right customer at the right time* (cf. Level III in Figure 3) (Rosemann et al., 2012). First, it is necessary to identify product trends (cf. Level IV in Figure 3) in order to identify market needs and to be able to provide the customers with the right products. This can be done with a *market trend analysis* (cf. Level V in Figure 3). Then, in order to tailor appropriate offers to the right customers at the right time, *customer profile information* (cf. Level IV in Figure 3), such as general interests, social network group memberships, and *customer intentions* (cf. Level IV in Figure 3), such as buying intentions are required. An adequate way to collect the static part of the required information is a *demographics and profiling analysis* (cf. Level V in Figure 3). *Insight mining* (cf. Level V in Figure 3) can then be used to learn about customer behaviors, intentions, and preferences (Kurniawati et al., 2013). Once the required information is obtained, a customer segmentation analysis (cf. Level V in Figure 3) (Malsbender et al., 2013) can then be performed to determine adequate clusters.
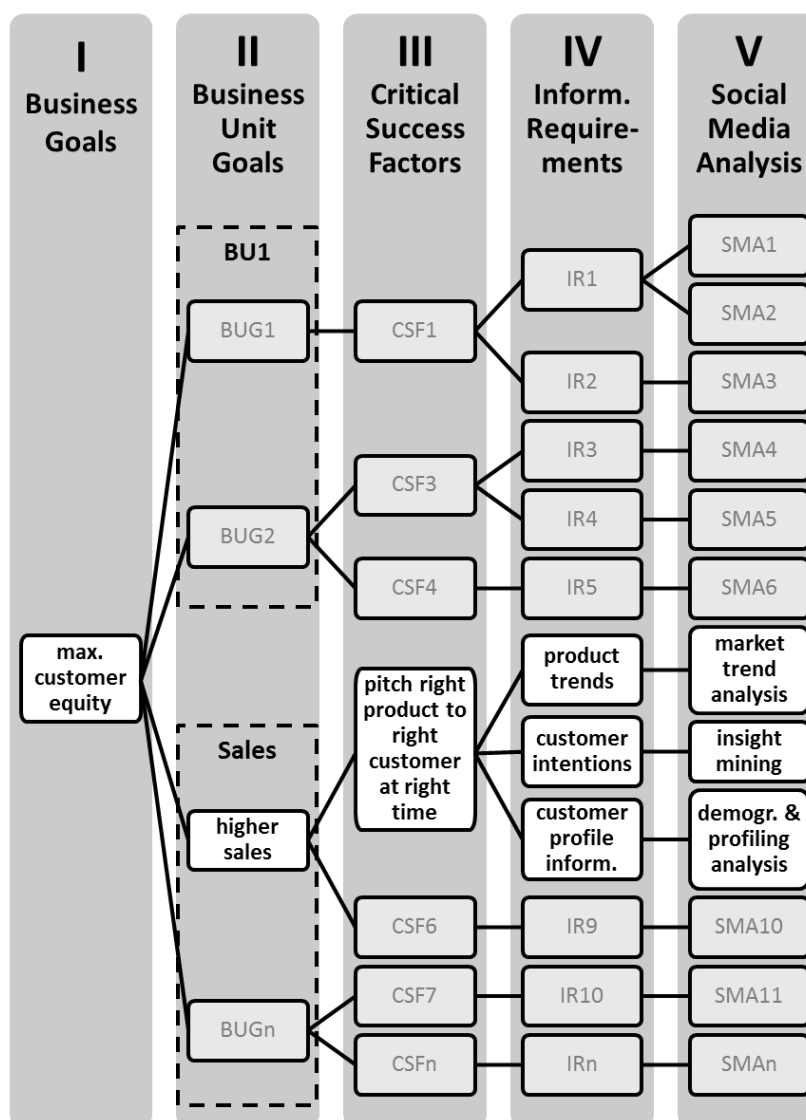
Figure 4.   Example Framework for the Business Goal of max. Customer Equity (own illustration)

The presented framework provides transparency and structures the complexity of SMA by breaking up its alignment process into manageable parts. With the approach, certain SMA concepts and the required information contributing to the overall goal of maximizing customer equity were identified. It thus supports the alignment of adequate SMA concepts with respective business goals. Therefore, it is ensured that the information collected with SMA serves specific goals and is relevant to a company's success.

5   Discussion and Limitations of the Results

In this paper, we have outlined the need for business alignment of SMA and suggested that concepts from requirements engineering can be utilized to achieve this. This is an early contribution that introduces requirements engineering to the context of SMA. We encourage executives to become more deeply involved in the business alignment of SMA. Furthermore, we provide guidance and structure for the identification of information requirements that are relevant for the success of the business and the decision-makers involved. However, our findings are not without limitations.

According to Pohl and Rupp (2011), there are a total of three core dimensions of requirements engineering: *elicitation*, *documentation* and *consolidation*. With our research, we mainly support the *elicitation* dimension of requirements engineering (Pohl and Rupp, 2011). Requirements elicitation is

defined as collecting information requirements transparently based on formulated goals (Stroh et al., 2011). Many practitioners particularly demand direct applicability for the processes suggested in this context (Stroh et al., 2011). Our framework addresses the connection of goals and requirements, and takes into account that there are multiple decision-makers from different business units involved. However, ways of gathering the requirements, such as interviewing or brainstorming, are not discussed. The *consolidation* dimension refers to the identification of overlapping information requirements and is a crucial part that has to be considered when applying our framework. This includes ensuring that information is not collected redundantly and synergetic potential is realized when multiple business units specify the same information requirements. Another aspect of this dimension is to determine the recipients of the respective information, i.e. the respective decision-makers. For the different business units this is highly transparent in our suggested framework. However, should it be necessary to differentiate between different decision-makers within the same business unit, this step would have to be analyzed and documented more clearly. For the *documentation* dimension, practitioners demand that it should be easily understood by IT as well as executives (Stroh et al., 2011). While our framework provides a simple way of documenting the overall structure of the information requirements and the respective relationships of CSFs, business goals, and SMA, it lacks the level of detail that the guidelines for requirements engineering normally demand, especially for the development of information systems. However, as we do not propose building a new information system, but rather focus only on the business alignment of SMA, this particular guideline might not be crucial to this context. In addition to these core dimensions, requirements engineering also includes the two cross-sectional activities, *management* and *validation* (Pohl and Rupp, 2011). Cross-sectional means these activities should be performed throughout all three core dimensions and on a continuous basis, especially in the context of fast moving SMA. The objective of the *management* dimension is to establish processes that help the business units to easily communicate their updated information demands to the SMA experts in charge of the operational routines of SMA (Stroh et al., 2011). The demands for the *validation* dimension apply mainly to the IT departments, which need to verify whether the information requirements can actually be collected with the proposed SMA concepts.

While the alignment of SMA presented in this paper is highly important as it contributes to the profitability of the selected SMA efforts, there is also an "*enable-perspective*" that needs to be in the focus of future research. This perspective refers to the potential of new and existing SMA concepts to enable the extraction of new business insights, which were not precisely looked for or not possible with previous concepts. Therefore, healthy communication between executives and SMA experts needs to be ensured. The latter should be encouraged to report about new SMA concepts, which could potentially enable the collection of new business insights. This is especially true for a new discipline like SMA, where there is continuous improvement of the available analytical concepts and researchers continue to present new combinations of existing analyses in order to solve new problems (Stieglitz et al., 2014). In this context, SMA can also contribute to a better understanding of a company's environment and therefore enhances the methods referred to by the term *environmental scanning*, i.e. "the managerial activity of learning about events and trends in the organization's environment" (Hambrick 1981).

Further research might improve upon our findings regarding these limitations. Also, in light of the emerging research topic of Social Business Intelligence (e.g. Rosemann et al., 2012), insights from requirements engineering in the context of SMA could be further explored to help include insights from SM into the existing infrastructure of Business Intelligence systems. With the guidance of our framework, future research can also further structure the field of SMA with the comprehensive identification of SMA concepts, as well as CSFs and business goals that can be supported by SMA.

6 Conclusion

In this study, we addressed the need to establish clear goals for SMA with the purpose of only collecting information that is crucial to a company's success. To accomplish this, we introduced the business alignment of SMA as a vital step towards deriving business value from SMA efforts in accordance with the practices of value-based management. While the existing SMA literature frequently identifies this

need, it only addresses individual steps of the necessary alignment rather than outlining a comprehensive approach. Therefore, we contributed in four ways: first, we adapted a recognized scientific framework from requirements engineering to this new context. This framework helps break down the business goals of a company into smaller entities of CSFs which provide a level of detail that enables the identification of corresponding information requirements relevant for the companies' decision-makers. Second, we contribute by structuring the field of action for executives less familiar with SMA. Third, in order to extract this information from SM platforms, suitable SMA concepts were identified. Fourth, we provided guidance for the framework application in a practical setting by giving examples or metadata where applicable. Finally, we discussed our research as it relates to the five dimensions of requirements engineering and showed limitations of the selected approach.

With this approach, we contribute to the scientific progress in the field of SMA research and support the practical application, as we provide detailed and directly applicable support for the business alignment of SMA. Future research should refine the use of requirements engineering insights for this new analytical context of SMA.

References

Alavi, M. and P. Carlson (1992). "A Review of MIS Research and Disciplinary Development." *Journal of Management Information Systems*, 45-62.

Andriole, S. J. (2012). "Seven Indisputable Technology Trends That Will Define 2015." *Communications of the Association for Information Systems* 30.

Asur, S. and B. A. Huberman (2010). "Predicting the Future with Social Media." *Proceedings of the Web Intelligence and Intelligent Agent Technology (WI-IAT), 2010 IEEE/WIC/ACM International Conference on*, 492-499.

Bekmamedova, N., G. Shanks and S. Carlsson (2014). "Achieving Organisational Benefits with Social Media Analytics." *DSS 2.0 – Supporting Decision Making With New Technologies.*

Culnan, M. J., P. J. McHugh and J. I. Zubillaga (2010). "How Large US Companies Can Use Twitter and Other Social Media to Gain Business Value." *MIS Quarterly Executive* 9 (4), 243-259.

Gilfoil, D. M. (2012). "Return on Investment For Social Media: A Proposed Framework For Understanding, Implementing, And Measuring The Return." *Journal of Business & Economics Research (JBER)* 10 (11), 637-650.

Grubmüller, V., Götsch, K. and B. Krieger (2013). "Social Media Analytics for Future Oriented Policy Making." *European Journal of Futures Research* 1 (1), 1-9.

Hambrick, D.C. (1981). "Specialization of Environmental Scanning Activities among Upper Level Executives." *Journal of Management Studies* 18, 229-320.

Hennig-Thurau, T., E. C. Malthouse, C. Friege et al. (2010). "The Impact of New Media on Customer Relationships." *Journal of Service Research* 13 (3), 311-330.

Hofstede, G., C. A. Van Deusen, C.B. Mueller, T.A. Charles and The Business Goals Network (2002). "What Goals Do Business Leaders Pursue? A Study in Fifteen Countries." *Journal of International Business Studies*, 785-803.

Holsapple, C., S. Hsiao and R. Pakath (2014). "Business Social Media Analytics: Definition, Benefits, and Challenges." *Proceedings of the 20th Americas Conference on Information Systems (AMCIS) 2014.*

Kaiser, C. and S. Schlick (2011). "Frühwarnsystem zur Identifikation kritischer Situationen der Meinungsbildung im Web 2.0." *Wirtschaftsinformatik Proceedings 2011,* Paper 12.

Kaske, F., M. Kugler and S. Smolnik (2012). "Return on Investment in Social Media--Does the Hype Pay Off? Towards an Assessment of the Profitability of Social Media in Organizations." *Proceedings of the 45th Hawaii International Conference on System Science (HICSS) 2012*, 3898-3907.

Kasper, H., I. Koleva and H. Kett (2012). "Social Media Matrix - Matching Corporate Goals with External Social Media Activities" *Extended Semantic Web Conference 2012 (ESWC2012),* Common Value Management 9.

Kietzmann, J. H., K. Hermkens, I. P. McCarthy and B. S. Silvestre (2011). "Social Media? Get Serious! Understanding the functional building blocks of social media." *Business horizons* 54 (3), 241-251.

Kiron, D., D. Palmer, A. N. Phillips and R. Berkman (2013). "Social Business: Shifting out of First Gear." *MIT Sloan Management Review Research Report 2013.*

Kurniawati, K., G. Shanks and N. Bekmamedova (2013). "The Business Impact of Social Media Analytics." *Proceedings of the 21st European Conference on Information Systems (ECIS) 2013, Completed Research,* Paper 48.

Larson, K. and R. Watson (2011). "The Value of Social Media: Toward Measuring Social Media Strategies." *Proceedings of the 32nd International Conference on Information Systems (ICIS) 2011,* Paper 10.

Malsbender, A., D. Beverungen and M. Voigt (2013). "Capitalizing on Social Media Analysis–Insights from an Online Review on Business Models." *Proceedings of the 19th Americas Conference on Information Systems (AMCIS) 2013.*

Mandviwalla, M. and R. Watson (2014). "Generating Capital from Social Media." *MIS Quarterly Executive* 13 (2).

Mendoza, L.E., M. Perez and A. Griman (2006). "Critical Success Factors for Managing Systems Integration." *Information Systems Management* 23 (2), 56-78.

Munro, M.C. and B.R. Wheeler (1980). "Planning, Critical Success Factors, and Management's Information Requirements." *MIS Quarterly* 4 (4), 27-38.

Picot, A., R. Reichwald and R. Wigand (2008). *Information, Organization and Management.* Springer.

Pohl, K. (2008). *Requirements Engineering: Grundlagen, Prinzipien, Techniken.* Dpunkt-Verlag.

Pohl, K. and C. Rupp (2011). *Requirements Engineering Fundamentals: A Study Guide for the Certified Professional for Requirements Engineering Exam.* Rocky Nook, 2011.

Reinhold, O. and R. Alt (2011). "Analytical Social CRM: Concept and Tool Support." *BLED 2011 Proceedings*, 226-241.

Rockart, J. F. (1979). "Chief Executives Define Their Own Data Needs." *Harvard Business Review* 57 (2), 81-93.

Rosemann, M., M. Eggert, M. Voigt and D. Beverungen (2012). "Leveraging Social Network Data for Analytical CRM Strategies: the Introduction of Social BI." *Proceedings of the 20th European Conference on Information Systems (ECIS) 2012.*

Rust, R. T., K. N. Lemon and V. A. Zeithaml (2004). "Return on Marketing: Using Customer Equity to Focus Marketing Strategy." *Journal of Marketing* 68 (1), 109-127.

Seebach, C., R. Beck and O. Denisova (2012). "Sensing Social Media for Corporate Reputation Management: a Business Agility Perspective." *Proceedings of the 20th European Conference on Information Systems (ECIS) 2012,* Paper 140.

Sinha, V., Subramanian, K.S., Bhattacharya, S. and K. Chaudhary (2012). "The Contemporary Framework on Social Media Analytics as an Emerging Tool for Behavior Informatics, HR Analytics and Business Process." *Journal of Contemporary Management Issues* 17 (2), 65-84.

Stieglitz, S., L. Dang-Xuan, A. Bruns and C. Neuberger (2014). "Social Media Analytics." *Business & Information Systems Engineering* 6 (2), 89-96.

Stroh, D. F., R. Winter and F. Wortmann (2011). "Method Support of Information Requirements Analysis for Analytical Information Systems." *Business & Information Systems Engineering* 3 (1), 33-43.

von Wangenheim, F. (2013). "CRM nicht aus den Augen verlieren." *Computerwoche: Social Analytics* 50.

Winter, R. and B. Strauch (2003). "A Method for Demand-driven Information Requirements Analysis in Data Warehousing Projects." *Proceedings of the 36th Hawaii International Conference on System Sciences (HICSS) 2003.*

Yang, M., Kiang, M., Ku, Y., Chiu, C. and Y. Li (2011). "Social Media Analytics for Radical Opinion Mining in Hate Group Web Forums." *Journal of Homeland Security and Emergency Management* 8 (1).

Zeng, D., H. Chen, R. Lusch and S. Li (2010). "Social Media Analytics and Intelligence." *Intelligent Systems, IEEE* 25 (6), 13-16.