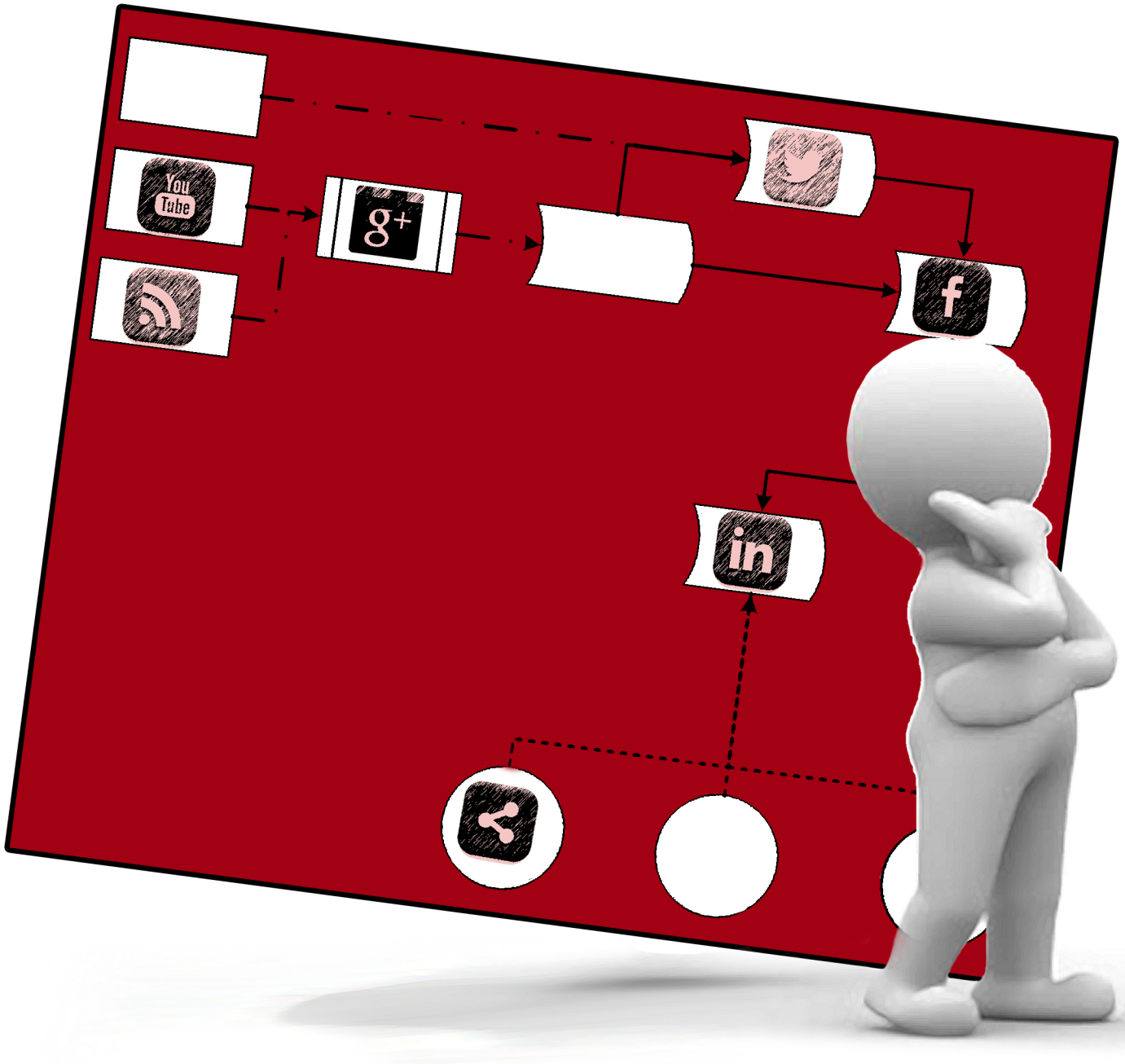
Process Socialization



A Study into Social Media Use in Business Processes and its Benefits

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University of Twente
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Master Thesis

Process Socialization:

A Study into Social Media Use in Business Processes and its Benefits

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Management Summary

Organizations are searching for strategies to optimally use social media in their business processes. Social media is increasingly put to use, however, it remains unclear for which processes the implementation of social media is beneficial. In literature some suggestions are made on this topic, as well as on how social media can be incorporated in BPM. This research attempts to clarify in which business processes social media is being implemented with the most benefit and contrast the outcomes with suggestions from literature.

To accomplish this goal first the characteristics of business processes were identified. For each characteristic, there are certain expectations on the relationship with process socialization (the extent of social media use in a business process). Hypotheses were constructed based on the suggestions from literature. It was expected that process socialization is beneficial for both organizational performance and process performance. It was also expected that social media would more likely be used in processes knowledge intensity, customer interaction, collaboration, and complexity. The opposite was expected hold for repetitiveness and security.

In order to test these hypotheses two methods were used. A survey was held among businesses in the Netherlands. In this survey the organizations were also asked to identify the benefits they experienced from their use of social media in business processes. Besides the survey, case descriptions were made from interviews at the Belastingdienst (The Dutch Tax and Customs Administration).

The outcome of the survey suggested that when deliberating the implementation of social media in a process, it is key to identify whether there is interaction between employees within the process or with customers to determine if the use of social media is appropriate in a process. It is appropriate to implement social media, when interactivity is high. Correlations also indicated that there is no relationship between security requirements in a process and process socialization. Meaning that social media is used in any process, regardless of security requirements. The most significant finding was that respondents indicated positive effects on process benefits as well as organizational benefits.

Acknowledgements

I would like to thank several people, who have supported me during the seven months of writing this thesis. Especially during the last couple of months. Starting off my first career, while moving to a new house, in combination with finishing up the thesis can become a little overwhelming. Without your help it would have been much harder.

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I would like to express my thanks to the supervisors from BiZZdesign as well, Dick Quartel and Wil Janssen. Dick, I would like to thank you for always keeping a 'helicopter view'. Making me see certain aspects of the thesis in a different light and making sure I keep in mind the use the thesis should have for BiZZdesign. Wil, you have been a great project leader. I am grateful for the discussions we have had within the team, your advice on many other things, and for even correcting the dots and comma's of my writing.

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Chapter 1 - Research Topic

1.1 Introduction

This master thesis combines two research topics: social media and business processes. The goal is to explore for which types of business processes the use of social media is compatible. This goal is accomplished by answering a twofold question: *How do the characteristics of business processes influence process socialization and does process socialization influence process and organizational performance?* In order to answer this question, a research was conducted on the current use of social media in business processes by organizations. A survey was held among organizations in the Netherlands and the results from the survey were triangulated with data from case studies at the Dutch Tax and Customs Administration.

As recognized by Smith (2012) "enterprises have implemented numerous overlapping social technologies during an experimentation phase, not all of them successful. […] Now many enterprises seek a strategy to engage social media more closely in the business." (p. 5) This is also the case for the Dutch Tax Department (hereafter: Belastingdienst); in 2006 social media was implemented in the form of an intranet where employees could collaborate. This however, led to a large collection of content instead of a collaborative space. The Belastingdienst wants to improve the online-tax return program, allow user feedback and continuous problem solving within the organization. The Belastingdienst expressed the desire to identify the impact of social media on its organization and the role it could play in its business.

The desire to improve the support of business processes by social media was communicated to BiZZdesign. The Belastingdienst is an old client of BiZZdesign; as such, it is an early adopter of the BiZZdesigns BPM and EA methods. BiZZdesign itself is an innovative, knowledge intensive organization, headquartered in Enschede. It offers complete business solutions for design and improvement of organization; with the primary goal of increasing business agility. To achieve these business solutions BiZZdesign offers tools, best-practice models, methods, education, and consultancy in five areas: Business Model Management, Enterprise Architecture, Business Process Management, Lean Management and Governance, and Risk & Compliance. This study focusses on the business process branch. For business process management, BiZZdesign develops software-tools, which support modeling and analysis of business processes. To support these tools, BiZZdesign offers consultancy and training that comprises a complete business process management method.

In order to fulfill the request of the Belastingdienst, and at the same time, improve the knowledge of BiZZdesign on the use of social media in organizations, the pilot project 'New

Models for the Digital Enterprise' was started. The project tackles several questions, for example: What is the potential of social media in organizations? Which organizational needs does social media fulfill? How can a structured approach to the integration of social media in processes be comprised? How can value of social media be measured? (Janssen and Blom, 2013) This thesis is conducted as part of the pilot phase of the 'New Models for the Digital Enterprise' project at BiZZdesign.

1.2 Context and Concepts

In order to set the stage for the rest of the research, the context and main concepts are explained. This short overview introduces the subjects of BPM, business process, Web 2.0, social media, and process socialization.

1.2.1 Business Processes in BPM

Before diving deeper into the theoretical background, one concept that is leading in this study needs to be clarified: business process. This concept, as used in this study, stems from business process management, or BPM. "BPM focuses on the administration of business processes; it is understood as a methodology for optimization of business processes, seeking to improve their efficiency and effectiveness through systematic procedures" (Gaona, Aguilar and Sanchez, 2013, p. 320). "Many organizations are using BPM as a key component in automating workflow tasks, increasing standardization, and improving performance." (Pereira, Vera and Miller, 2011, p. 58) The Belastingdienst for example, is one of the users of such a BPM methodology, for which BiZZdesign provides consultancy and tools.

One of the key authors on business process management, Davenport, defined business process as follows: "A business process is a structured set of activities designed to produce a particular output or achieve a goal. The process is a specific sequence of work activities through time and space, with a beginning, an end, and cleary defined inputs and outputs: a structure for action." (Davenport, 1993, p. 5) Within BiZZdesign, the definition by Davenport is combined with the definition of Hammer and Champy (1993) and is refined with experiences from practice. This definition is used in the research and states as: "a process is a set of activities, which occur between the request for a product or service and the delivery thereof. A process has a specific objective, runs from customer to customer, runs from a trigger to result and can take place between various departments and even various organizations." (Matthijssen, 2012, p. 17) This concept is further explored in chapter 2.

1.2.2 Web 2.0 and Social Media

Before elaborating on the phenomenon of social media in business, it is instrumental to introduce Web 2.0. As social media is in essence a part of the Web 2.0. Web 2.0 is closely related to Tim O'Reilly, also known for the Web 2.0 conferences. O'Reilly (2007) explains Web 2.0 in the following way:

> *"Web 2.0 is the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an "architecture of participation,".*

This architecture of participation holds for all Web 2.0 technologies, such as collaborative software (e.g. GitHub) or social media. Social media has been identified as a part of Web 2.0 technologies. For example, a general definition by Kaplan and Haenlein (2010) states; "social media can be identified as a group of internet based applications that builds on the ideological and technological foundations of Web 2.0 and that allow the creation and exchange of user generated content." (p. 61) In other words, "Web 2.0 is comprised of computer network-based platforms upon which social media […] run or function." (Weinberg and Pehlivan, 2011)

This thesis is focused on the use of social media by and in organizations. "Recently, organizations and researchers have begun experimenting with the use of internal social media in the workplace, hoping to reap the benefits of lightweight informal collaboration among employees." (Brzozowski, Sandholm and Hogg, 2009, p. 61) One such researcher is Andrew McAfee. Following up on the trend of Web 2.0, McAfee (2006) has coined the term 'Enterprise 2.0'. He uses this term to focus on those platforms that companies can buy or build, in order to make the practices and outputs of their knowledge workers visible (p. 23). Enterprise 2.0 indicates the use of Web 2.0 technologies throughout an organization, however, not all Web 2.0 technologies that are used in the organization are considered. Other Web 2.0 technologies are also used in organizations to collaborate in projects, such as groupware (e.g. calendar sharing).

1.2.3 Social Media in Organizations

As Gaona, Aguilar and Sanchez (2013) state; "Social software includes the tools and services that enable sharing information and digital objects". The emphasis on exchanging content or sharing information is a core of the social media definition. Everyone can think of at least a

few examples, such as Twitter or Facebook. However, what is considered social media, what boundaries does the concept have? Carlsson (2010) gives a short explanation on this question.

> "*Social media is not limited to social networks. The industry uses the term to describe the general phenomenon of many-to-many communications on the web used by different players in different ways, including to communicate and build relationships, distribute and share content, connect with customers and prospects, gather customer insights, sell products, provide customer service or collaborate with employees or business partners." (p. 6)*

This definition gives some direction, it makes clear at least that communication between multiple players is key and social media can be used for varying purposes. However, where do the many different examples of social media fit? As Gaona, Aguilar and Sanchez (2013, p. 321) state, "there are many types of social media such as blogs, wikis, intranet and RSS feeds". In an attempt to find some boundaries, a search in literature of different types and taxonomies was undertaken. Appendix A gives an overview of the different types of social media as they are found in recent literature. However, these types are not strictly separated. Examples of overlap between social media and other Web 2.0 technologies, such as groupware are common: e-mail providers with integrated chat functions, or wikis combined with forums. As such, it can be expected that with time and the development of new combinations and forms of social media, new types and taxonomies will arise.

This fuzziness in the concept of social media requires a choice of focus. In this study the focus lies on social media as used by organizations. The main reason for this is that the 'New Models for the Digital Enterprise' project focusses on organizations in particular. However, this research looks beyond the uses of social media in marketing, and includes for example Yammer or internal wikis. Benefits of corporate blogging for example have become apparent in a research by Jackson, Yates and Orlikowski (2007) and should not be overlooked. The use of social media in organizations is also referred to under the heading 'enterprise social media'. However, at this moment, there is no commonly accepted definition of 'enterprise social media'. A basic definition is provided by Smith, Hansen and Gleave (2009); referring to enterprise social media applications as "applications found on the public Internet, within the confines of an institution's firewall." However, this definition does not capture the full potential of social media, since social media as used by organizations can be free or open and is not necessarily confined within the firewalls of the organization. A broader definition is given by Christidis, Mentzas and Apostolou, (2012); "Enterprise Social Software refers to open and flexible organizational systems and tools which utilize Web 2.0 technologies to stimulate participation through informal interactions" (p. 9297). For the purpose of this

research, the second definition is most appropriate, since the focus is not only on the internal use of social media, but social media as utilized by the organization for both internal and external purposes.

1.2.4 Social Media and Business Processes

McAfee (2006) envisioned the importance of social media to organizations: it has the potential to "knit together an enterprise and facilitate knowledge work in ways that were simply not possible previously" (p .22). In fact, many types of social media are already used by organizations: "Organizations adopt social media tools like message boards, blogs, wikis, friend and contact networks, activity streams and file, photo, and video shares" (Smith, Hansen and Gleave, 2009 p. 705). In this case, focus is placed on social media combined with business processes. Several links between social media and business processes can be identified when exploring this topic in scientific literature. The main research topics are summarized by Schmidt and Nurcan (2009) firstly, the focus on enhancement of processes through social media: "social media can enhance business processes by improving exchange of knowledge and information, for example by speeding up decision making." (p. 650). Secondly, they suggest: "social software may support business process management itself" (p. 650). This direction of research attempts to implement social software within the business process management life cycle (p. 656). Thirdly, since social media is assumed to influence processes and its use in business processes is increasing, the question has arisen whether business process modeling languages should include new notations that support display of social media usage in business processes (Brambilla, M., Fraternali, P and Vaca C., 2012).

This research focusses on the first link: the enhancement of business processes using of social media. Several authors state that business processes can be made more efficient or effective by social media (Schmidt and Nurcan, 2009; Brambilla, Fraternali and Vaca, 2012; Komus, 2011). However, it has remained unclear which type of social media to use for which type of process or when and which processes are compatible with social media. The goal of this research is to explore for which types of processes the use of social media is most compatible. This goal is partly chosen since literature on this topic is not clear on this point. The project 'New Models for the Digital Enterprise' provided an organizational incentive to explore this issue. When researching the topic, statements can be found on which type of processes can benefit from social media (Smith, 2012, p. 1), these statements are discussed further in chapter 2. However, such statements are not (yet) backed with proper evidence and most

come from practice or non-academic research (e.g. Gartner Inc.). This provides even more reason to undertake this study.

The presumed types of processes that benefit from social media are elaborated on in the literature study in Chapter 2 and represent the basis of the conceptual research model. Through the analysis of business processes, a beginning is made to address a higher goal of this study: to contribute to an improved business process management method in which social media is incorporated.

1.2.5 Core Concept: Process Socialization

As explained above, the basis of this study is an analysis of the use of social media in business processes. In order to assess this, the processes that make use of social media are identified. In other words, which processes have become the most 'social'? To describe this becoming social of business processes though the use of social media, a new term is coined: process socialization. Not to be confused with organizational socialization, which refers to "the fashion-in which an individual is taught and learns what behaviors and perspectives are customary and desirable within the work setting as well as what ones are not." (Van Maanen and Schein, 1979)

The concept of process socialization is defined as: *the extent of social media use in a business process*. Process socialization is inspired by a research on process virtualization by Overby (2008) in which research was conducted on the possibility of executing parts of processes virtually. In this case, the use of social media in processes is explored, so are parts of the process executed 'socially'? As such, process socialization is referred to as the extent of social media use in a business process. Table 1 shows the concept with its definition as used in this research and the survey. The survey items are the statements that are used in the questionnaire to measure the particular concept, these are elaborated on later.

Table 1: Operationalization process socialization

Concept	*Definition*	*Survey Items*
Process socialization	The extent of social media use in a business process	**SOC1** Social media is a standard part of the business process **SOC2** Social media is implemented for particular tasks in the business process **SOC3** For the tasks which social media is implemented, it is also used **SOC4** How often is social media used by employees in the business process

1.3 Research Problem

As mentioned, the thesis should answer for which types of business processes are compatible with social media. The current situation in enterprises that use social media in processes is examined in order to gain insight in this problem. Which leads to the following research question and sub question accordingly:

> ***How do the characteristics of business processes influence process socialization and does process socialization influence process and organizational performance?***

In order to answer the main question, the different types of business processes that exist need to be described in depth and their characteristics need to be defined.

Which types of business processes exist and what are their characteristics?

For each characteristic it is considered whether they influence process socialization.

How are the characteristics of business processes correlated with process socialization?

Finally, the effect of process socialization is on processes and the organization are considered.

How does process socialization impact the performance of the organization and processes?

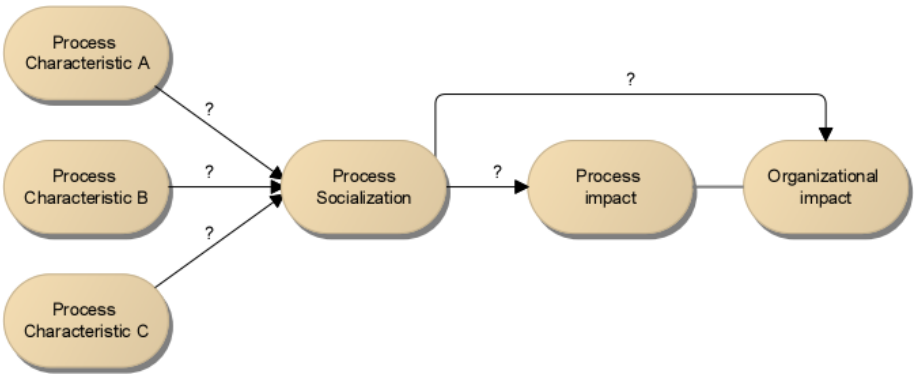


Figure 1: Working model

1.4 Research Approach

As any other academic research project, this study follows an approach and method in order to guide the research process and structure the thesis. As a basis, the functionalistic research approach by Bhattacherjee (2012) is used. “This generalized design is not a roadmap or flowchart for research; it can and should be modified to fit the needs of a specific project.” (Bhattacherjee, 2012, p. 22) As such, figure 1 below depicts an adaptation of the approach, including the steps followed in this specific project. The type of research is a survey research, triangulated with data from cases at the Belastingdienst.

The first phase is exploration, and includes "exploring and selecting research questions for the study, examining the published literature on the area of interest, and identifying theories that may help to answer the question" (p. 22). These steps are covered in chapters one and two, with chapter one discussing the research question and chapter two discussing theory in a literature review.

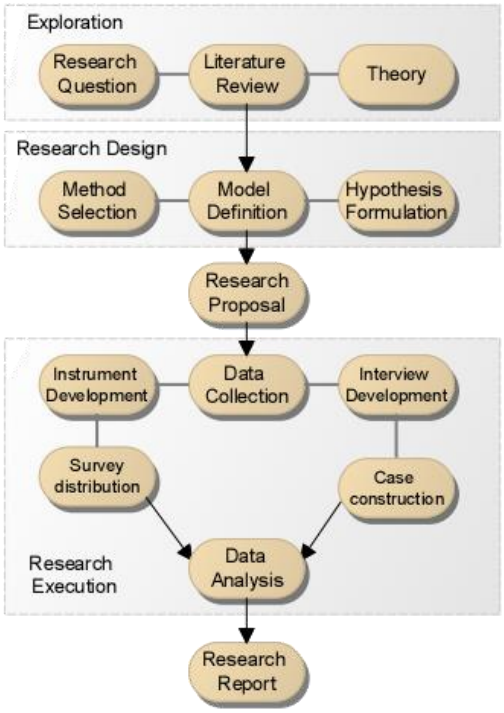


Figure 2: Research process (adaptation from Bhattacherjee, 2012, p. 22)

The second phase is the research design, including the following steps; defining the research model of interest, devising appropriate hypotheses and selecting a research method to test the hypotheses. These steps are covered in chapter two and three. These first three chapters were the basis for the research proposal. The last phase is the research execution and includes; data collection and data analysis. In this research, data collection is split in two paths, instrument development to prepare the survey and interview development to construct the cases. These steps are covered in chapter four, five and six. Chapter four covers data collection, chapter five analysis, and chapter six the discussion and final conclusion of the analysis.

"*While research is often depicted as moving through each of the stages outlined above, one after the other, this is unlikely to be the case. In reality you will probably revisit each stage more than once. Each time you revisit a stage you will need to reflect on the associated issues and refine your ideas*." (Saunders, Lewis and Thornhill, 2009, p. 10) This research, for example, has already shifted focus from business process management to business processes due to the feasibility of the study as a master thesis.

1.5 Contribution of the Research

The developments in business processes using social media are promising; as can be seen from the reference list. However, most publications stem from conferences or workshops on Social Business Process Management. At the moment, few contributions have been published in top journals such as Academy of Management Journal that consider the topic of this thesis. A contribution of this paper is to strengthen theory concerning social media and business processes with a survey among organizations in the Netherlands and case material from the Belastingdienst.

Besides this theoretical contribution, interest has also risen among organizations on the effect of social media on their businesses. The results from this study can be used to determine whether a business process is suitable for the use of social media. This is the first step in a larger process of adapting an organization to the development in social media in a business process management program. As such, BiZZdesign can use the results in practice by adapting consultancy or training programs in the area of business processes accordingly. In this manner, the results of the research may contribute to the efforts of BiZZdesign in updating its business process management method. In chapter 6 paragraph 2, the concluding implications for theory and practice are discussed in further detail.

Chapter 2 – Theoretical Framework

2.1 Literature Research Method

This literature search addresses the construct business process, as well as publications on social media in combination with business processes. To undertake the literature review, an adaptation of the methodology as used by Pateli and Giaglis (2004) is applied. There are two main phases in this literature research; selection and analysis. The selection phase is aimed at identifying and selecting publications, which represent the current body of knowledge (Pateli and Giaglis, 2004, p. 304), starting with a screening of publications on SCOPUS, Google Scholar and the search engine of the University of Twente Library. The following keywords were used:

Enterprise social media; social media; business process management; business process; business process + social media; Web 2.0; bpm + social media; types + social media

After the initial keyword search, the subjects of the found articles were identified by reading abstracts and scanning content and the references were searched for possibly relevant articles that did not come up in the keyword search. Finally, publications were selected based on relevance to the subject of social media and/or business processes. The publications stem from five relevant topics as depicted below (not all references included, for all references see reference list).

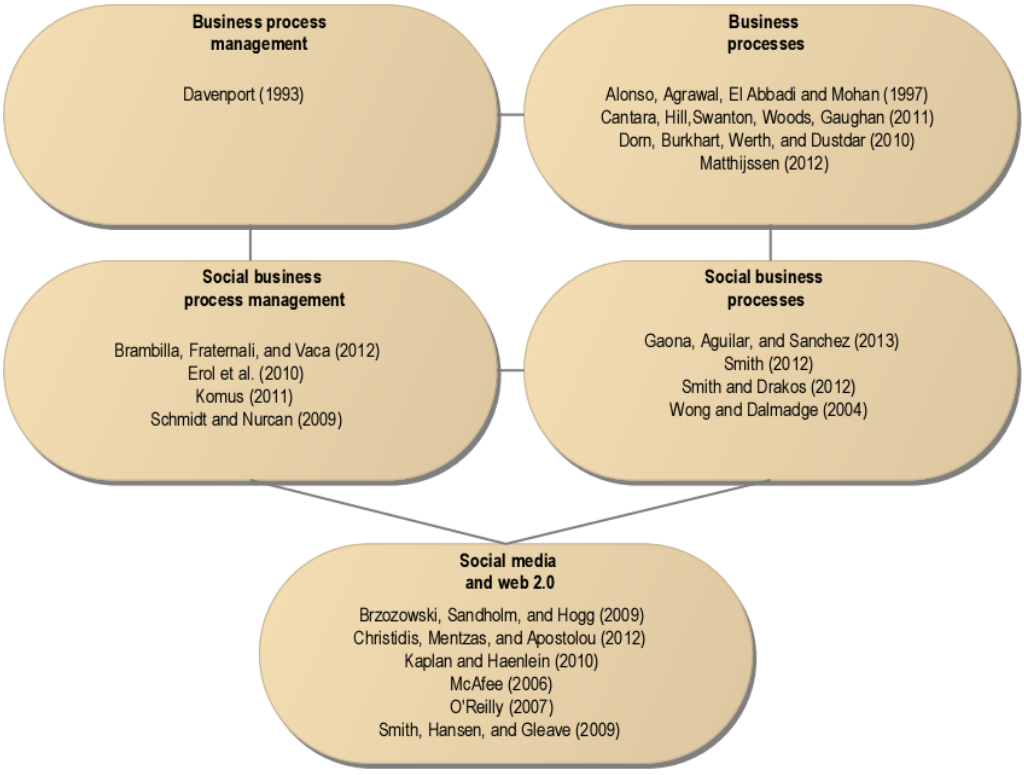


Figure 3: Selection of relevant publications

2.2 Business Processes

2.2.1 Introduction to Business Processes

Business process is a broad concept and different understandings of the term exist. In this study, the business processes that are studied are business processes as represented in business process management methods. This means a horizontal view of the organization with regard to its processes is implied. Instead of focusing on tasks within departments a horizontal view of the organization is key: "rather than focusing on jobs structured in distinct departments, the emphasis is on processes that cut horizontally across the organization and involve teams of employees working together to serve customers" (Daft, 2010, p. 80). Business processes are diverse; the analysis of processes is not limited to for example production or administrative processes. Business processes can be identified by several elements; a business process "has a specific objective, runs from customer to customer, runs from a trigger to result and can take place between various departments and even various organizations." (Matthijssen, 2012, p. 17)

Figure 3 is a simple representation of a business process from a modelling exercise, examples from practice are far more complex. Part of an ordering process is depicted. This registering process involves several actors and an outside organization.

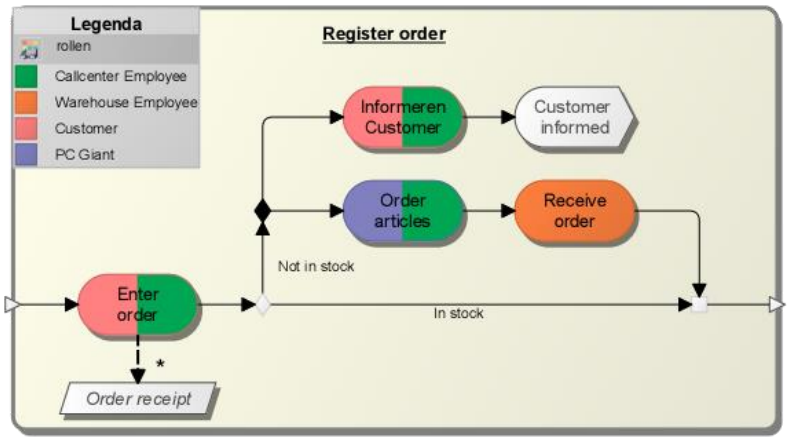


Figure 4: A business process involving multiple actors

2.2.2 Types of Business Processes

Literature on business process types and their characteristics is not extensive. However some authors have typified business processes in their larger research efforts, these are presented below. The characteristics of processes which are distilled from the different types are described in paragraph 2.3.3. The findings are summarized in table 1.

Table 2: Findings on process types and characteristics

Author	*Types of processes*	*Process characteristics*
Erol et al. (2010)	Well vs. ill defined	Knowledge intensity, repetitiveness
Dorn et al. (2010)	Structured vs. semi-structured vs. ad-hoc	Standardization, case-orientation
Cantara et al. (2011)	Structured vs. unstructured	Interaction definition, exception expectation, activity type
Alonso et al. (1997)	Administrative vs. ad-hoc vs. collaborative vs. production	Relation to organization function, collaboration, exception expectation
Wong, Dalmadge (2004)		Complexity, knowledge intensity
Smith, Drakos (2012)		Security

Erol et al. (2010) make a distinction between well-defined and ill-defined processes. The *well-defined* processes represent repetitive processes with task coordination and automation needs, while *ill-defined* processes are more knowledge intensive and preoccupation lies with knowledge sharing rather than coordination of tasks (p. 460).

Dorn, Burkhart, Werth and Dustdar (2010) make a similar distinction; they present three categories, from structured and semi-structured to ad-hoc processes (p.328). "*Structured* processes represent the traditional work flows with full automation capacity. Structured process-models determine a-priori the complete process flow, agents, alternative paths etc. and remain unchanged for all process instances. *Semi-structured* processes, or case-oriented processes, reside between ad-hoc processes and structured processes. They follow certain rules but cannot be entirely standardized. *Ad-hoc* processes represent the most flexible type of processes because their actual execution path is completely defined at run-time with no given structure forcing a certain course of action." (p. 328)

A third classification that is similar is made by Cantara, Hill, Swanton, Woods and Gaughan, (2011) focusing on structured vs. unstructured processes: "Defined interactions and anticipated exceptions are characteristic of structured, repeatable processes. Unstructured processes include unanticipated exceptions, creative activities and collective activities." (p. 5)

A somewhat differing classification is presented by Alonso, Agrawal, Abbadi and Mohan (1997) which distinguishes between administrative, ad hoc, collaborative and production processes. "*Administrative* processes are bureaucratic processes where the steps to follow are well established and there is a set of rules known". "*Ad Hoc* processes are similar to administrative processes except they deal with exceptions or unique situations." "*Collaborative* processes are mainly characterized by the number of participants involved and the interactions between them." "*Production* processes can be characterized as the

implementation of critical business processes, those that are directly related to the function of the organization." (p. 4-5)

From this overview, it can be noted that the main distinction in business process types lies in how structured a process is: is it a structured/production process, and very repetitive, or a more ad-hoc/unstructured, and knowledge intensive process? The types are mainly defined by knowledge intensity, repetitiveness and amount of collaboration. However, other characteristics are also part of processes and can possibly affect process socialization. For example security; can be either high or low in both structured and unstructured processes, results from the study should indicate which type and characteristics are most determining of process socialization.

2.2.3 Characteristics of Business Processes

There are several characteristics which determine the types of processes that were distinguished. The characteristics that were finally chosen for analysis are described and defined in this paragraph. The choice of the characteristics is based on presence in literature, ability to construct measurement scales for a concept, and whether there are expectations from literature and/or the project team on a between the characteristic in relation to social media. The selection of process characteristics was reviewed and accepted within the project team, this team includes business process management experts.

The first characteristic that is considered is *knowledge intensity*, mentioned by both Erol et al. (2010) and Wong and Dalmadge (2004). According to Starbuck (1992); knowledge-intensive implies 'knowledge has more importance than other inputs', (p. 715) such as labor. The extent of knowledge intensity in a business process context can be found by analyzing knowledge about content of a process and knowledge about a process itself (Wong and Dalmadge, 2004, p.3).

Repetitiveness in the context of business processes can be defined as the action of repeating a process. Indications of repetitiveness are automation of a process and the amount of exceptions in a process (Alonso, Agrawal, Abbadi and Mohan, 1997).

Edmonds (1998) has constructed a general definition of *complexity* to be used in all manner of scientific analysis. When formulated in his term, complexity in the context of business processes can be defined as: 'the difficulty associated with a process when given almost complete information about its components and inter-relations'. As such, the complexity of a process can be determined by the tasks included in a process and dependency between itself and other processes (Wong and Dalmadge, 2004, p. 2).

Collaboration is defined in this study as the action of working together in order to produce something (Oxford Dictionaries, 2013). The amount of collaboration in a process is measured with an adapted scale from Kahn and Mentzer (1998, p.62) on collaboration between departments in an organization, to collaboration within business processes.

Smith and Drakos (2012) argue that if a process touches upon regulatory, privacy or confidentiality issues, this might put stricter requirements on collaboration and social technologies (p. 3). For the purpose of this research these issues are placed together under the heading of *security*. As such, security is defined here as the extent to which the execution of a process is influenced by regulatory, confidentiality or privacy issues.

Lastly, one other characteristic is considered. Surprisingly, this characteristic was not covered in relation to social media in related literature: customer interaction within a process. This characteristic is included in the research model, since it is expected to be correlated with process socialization. Customer interaction in processes is defined here as 'the act of communicating with a customer in the process'.

Figure 5 represents the first part of the research model, with the strength of the relationships between the process characteristics and process socialization yet to be determined.

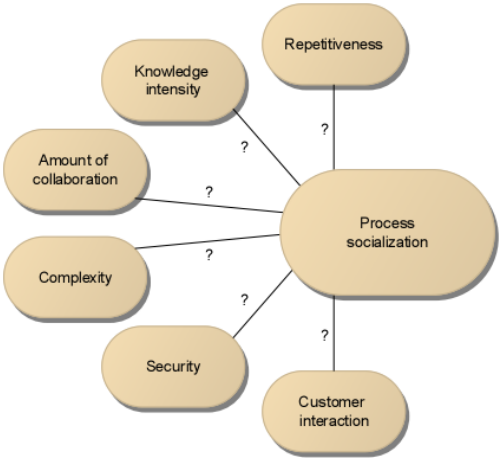


Figure 5: Process characteristics and process socialization

2.3 Process Characteristics and Process Socialization

In recent literature assumptions are made about the types of processes that might benefit from the implementation of social media or how the characteristics might affect the relationship. For example, Smith and Drakos (2012) claim that integrating social and collaboration functions will not help if the process follows a tight script and few exceptions arise (p. 2). Suggesting that the more structured a process, the less benefits it may have from process socialization. The hypotheses on the effects of the process characteristics on process

socialization are based on such suggestions from literature or from the researcher's expectations when the influence of a characteristic is not mentioned.

An overview of the process characteristics and how they are measured in the survey can be found in table 3.

Erol et al. (2010) mention that knowledge intensive processes might benefit the most from social software integration. Meaning that the first hypothesis, can be formulated as follows:

Hypothesis a: The more knowledge intensive a business process is, the more receptive it is to process socialization

As mentioned above, according to Smith and Drakos (2012) processes that follow a tight script will not benefit from integration of social media functions (p. 2). As such, it is expected that repetitive processes will not be receptive to process socialization, hence hypothesis b:

Hypothesis b: The less repetitive a business process is, the more receptive it is to process socialization

If a business process is dependent on multiple other processes, the flow of information increases and complexity rises. As such, it is expected that when a process is more complex, process socialization is higher, leading to hypothesis c.

Hypothesis c: The more complex a business process is, the more receptive it is to process socialization

A collaborative process can involve 'several iterations over the same step until some form of agreement has been reached or it may even involve going back to an earlier stage. This requires tools that are focused on collaboration.'(Alonso, Agrawal, Abbadi and Mohan, 1997 p. 4) As such, hypothesis d is formulated.

Hypothesis d: The more collaboration in a business process, the more receptive it is to process socialization

On the characteristic of security, it is expected that more security in a process puts stricter requirements on social technologies, therefore hypothesis e is formulated as follows:

Hypothesis e: The less security is required in a business process, the more receptive it is to process socialization

The expectation is that a process in which interaction with customers is high social media can be an important factor; for example when asking customer feedback on a process or login in to order products through social media. As such, hypothesis f is formulated;

Hypothesis f: The more customers interact with a process, the more receptive it is to process socialization

Table 3: Operationalization process characteristics

Concept	*Definition*	*Survey Items*
Repetitiveness	The action of repeating a process	**REP1** There are clear procedures and steps for the business process **REP2** The business process is automated
Knowledge intensity	The importance of knowledge over other inputs in the process	**KNO1** The knowledge required for the business process is documented in manuals and reports **KNO2** The business process is more dependent on knowledge than infrastructure (e.g. machinery, raw input) **KNO3** The business process requires tacit knowledge **KNO4** The process requires explicit knowledge
Collaboration	The action of working together in order to produce something	**COL1** Employees in the business process achieve goals collectively **COL2** Employees in the business process have a mutual understanding **COL3** Employees in the business process share idea's information and other resources **COL4** Employees work together informally **COL5** Employees in the business process share the same vision for the company **COL6** Employees in the business process work together as a team
Complexity	The difficulty associated with a process when given almost complete information about its components and inter-relations	**COM1** The business process is subject to change **COM2** The output of the business process is the input of another process **COM3** There are exceptions in the business process
Security	The extent to which the execution of a process is influenced by regulatory, confidentiality or privacy issues	**SEC1** The business process is concerned with privacy issues **SEC2** The business process is concerned with confidential information **SEC3** The business process is concerned with regulation (jurisprudence)
Customer interaction	The act of communicating with a customer in the process	**INT1** The business process requires customer input **INT2** Customer feedback is used in this business process

2.4 Impact of Process Socialization on Process and Organizational Performance

What does social mean for processes? As Erol et al. 2010 (p. 459) mention, social software only presents its benefits after some time, as employees need to be persuaded to contribute and it is claimed that "the more engaged people are in a process, the more it will improve" (Gall and Bradley, 2012, p. 5). In the research articles claims are made about the effect of adding social media to the processes with respect to organizational performance. Nevertheless, what are these expected results or improvements?

2.4.1 Process Benefits

One presumed benefit is related to collaboration efforts between employees in processes: according to Smith (2012) such "collaboration will be made more effective through the use of social media." (p. 1) Multiple authors claim the improvements of business processes through social software are apparent from an "improvement in the exchange of knowledge and information" (Schmidt and Nurcan 2009 p. 657); (Erol et al. 2010, p.470).

Besides general collaboration between employees, there are also more individual benefits. "The transparency enabled by social software enables the accountability for decision making to be aligned with responsibility at the lowest level in the organization. This speeds the time to response" (Olding, 2011, p. 5) This is one of the goals of the Belastingdienst: increasing accountability on content owners. Through pressure of the community, it wants to increase the response to suggestions that are made on social media platforms. Another benefit is that "social software has the potential to […] speed up decisions and to improve the global reactivity of the enterprise." (Erol et al., 2010, p. 470) Lastly, Schmidt and Nurcan (2009, p. 657) note that "a high responsiveness to workflow changes will be reached and exceptions can be detected and repaired in a collaborative manner." and that "the aggregation and fusioning of knowledge to cope with incidents are also facilitated by social software."

Table 4: Process benefits

Author	*Process benefits*
Erol et al. (2010)) Schmidt and Nurcan (2009)	Coping with incidents/exceptions in process
Schmidt and Nurcan (2009)	Improve knowledge and information exchange
Erol et al. (2010)	Increase speed of decision making
Smith (2012)	Increase effectiveness of collaboration
Olding (2011)	Increased accountability to responsibilities

The benefits mentioned here are summarized in table 2. The benefits of social media for business processes are part of the research model (see figure 6). As such, the relationship

between the use of social media in a process and the performance of a process is formulated in hypothesis G:

Hypothesis G: The higher the socialization of a process, the more positive effect it has on process outcomes

2.4.2 Organizational Benefits

Besides these process outcomes, speculations are also made on the net benefits, the organizational impact of using social media in business processes. For example Erol et al. (2010) state that "some enterprises have gained competitive advantage by having a community of innovative users connected with the enterprise's product" (p. 465). The success of information systems has been researched before by DeLone and McLean (2003). They propose that several benefits can arise from using these systems such as: time savings, reduced search costs or increased competitive advantage (p. 26) In order to strengthen the their success model, measurements for success have been constructed and validated by Mirani and Lederer (1998, p.833) on the following points:

- Customer relations
- Competitive advantage
- Information quality
- Communication efficiency
- Business efficiency.

The measurement items from their research are used to answer questions of organizational benefits of social media (see the operationalization in table 3). These expected benefits of social media have, as far as the researcher is aware, not been researched in literature in the context of business processes at this time. The expected benefits are combined in hypothesis H.

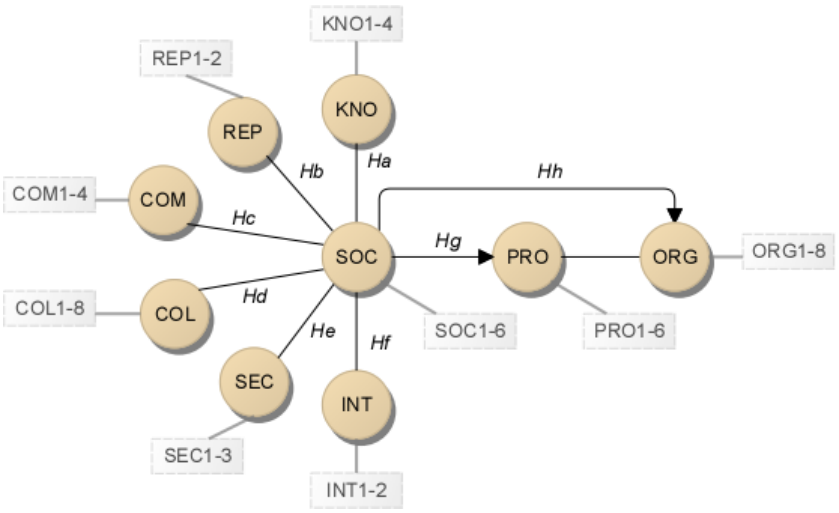
Hypotheses H: The higher the socialization of a process, the more positive effect it has on organizational outcomes

Table 5: Operationalization process and organizational benefits

Concept	*Definition*	*Survey Items*
Process Benefits	Benefits of social media use for process performance	**PRO1** Social media increased exchange of information in the business process **PRO2** Social media increased speed of decision making in the business process **PRO3** Social media increased effectiveness of collaboration in the business process **PRO4** Social media increased the ability to cope with exceptions in the business process **PRO5** Social media increased accountability of employees in the business process **PRO6** Social media increased knowledge sharing in the business process
Organizational Benefits	Benefits of social media use for organizational performance	**ORG1** Social media enhanced competitiveness or created strategic advantage **ORG2** Social media enables the organization to respond more quickly to change **ORG3** Social media improved customer relations **ORG4** Social media enabled faster retrieval of information (such as reports) **ORG5** Social media improved the accuracy of information **ORG6** Social media reduced costs by reducing communication costs **ORG7** Social media enhances employee productivity **ORG8** Social media reduced costs by reducing the workforce

2.5 Research Model

Other factors possibly moderate the proposed relationships. These factors are related to employee acceptance of technology. For example, perceived usefulness and perceived ease of use (Venkatesh, 2003, p.448 - 451) of a technology such as social media, can affect the implementation and usage of it. However, for this study, only the relationship between the characteristics of the processes and process socialization is of interest, since the relationship between acceptances of new technologies in business has been acknowledged and researched in depth in other studies. When the expected benefits are combined with the process characteristics as mentioned in paragraph 2.3 the research model are presented as follows:



KNO: Knowledge intensity
COL: Amount of collaboration
SOC: Process socialization
COM: Process complexity
REP: Process repetitiveness
SEC: Process security
INT: Customer interaction
PRO: Process Benefits
ORG: Organizational Benefits

Figure 6: Research model

Chapter 3 - Research Methodology

3.1 Research Strategy

3.1.1 Unit of Analysis

According to van Aken, Berends and van der Bij (2007), "if the subject of research is a particular business process, that whole process can be considered as the unit of analysis." (p. 132) In this study the unit of analysis is business processes. The use of social media in business processes is the focus of this study, with process characteristics determining this use. As such, the independent variables are the characteristics of processes. The dependent variable in is process socialization. Besides this, the relationships between process socialization and organizational benefits and process benefits are also measured. In this case, the dependent variables are process and organizational benefits, and the independent variable is process socialization.

3.1.2 Exploratory Research

Generally, the distinction is made between three purposes of research: descriptive, exploratory and explanatory. Babbie (2010) explains these purposes. "Descriptive studies are used to observe and describe what is observed." (p. 91) "Exploratory research is typically done either to: satisfy the researcher's curiosity and desire for better understanding, test feasibility of undertaking a more extensive study and to develop the methods to be employed in any subsequent study." (p. 90) "Explanatory research attempts to explain things; it attempts to answers questions of why." (p. 92) In this research the goal is to seek insight and explore of the use of social media in business processes. At the moment, the theoretical background on the subject of social media in combination with business processes is lacking rigor. Authors claim positive effects of incorporating social media in business processes (Schmidt and Nurcan, 2009; Brambilla, Fraternali and Vaca, 2012; Komus, 2011). However, there are few case studies, let alone empirically based confirmation of the truth of such claims. As such, an exploratory approach is appropriate here; "An exploratory study is a valuable means of finding out what is happening; to seek new insights; to ask questions and to assess phenomena in a new light" (Saunders, Lewis and Thornhill, 2009, p. 139). In exploratory research, the focus is initially broad and becomes narrower as the research progresses (p.140).

3.1.3 Triangulation

Since the basis of this study is so exploratory, triangulation is used to strengthen the quantitative findings with qualitative data. "Triangulation refers to the use of different data

collection techniques within one study in order to ensure that the data are telling you what you think they are telling you." (Saunders, Lewis and Thornhill, 2009, p. 146) According to Saunders, Lewis and Thornhill (2009) there are three principal ways of conducting exploratory research (p.140): a search of the literature; interviewing 'experts' in the subject; conducting focus group interviews. In this case, two methods of data collection are used; surveys and expert interviews.

The surveys are used to quantify the relationship of the variables between the process characteristics, process socialization and its organizational and process benefits. The results of the survey are the main dataset; which are used to confirm or disconfirm the hypothesis. Semi-structured interviews were conducted at the Belastingdienst in order to provide a more qualitative insight into the research question. The interviews were held with experts, for example the process managers and those responsible for social media within the organization.

3.2 Data Collection Methods

3.2.1 Survey Study

The primary research design has the form of a survey study: "a research method involving the use of standardized questionnaires or interviews to collect data about people and their references, thoughts, and behaviors in a systematic manner." (Bhattacherjee, 2012, p. 71) The questionnaire was administered in the form of an online survey, for which respondents received an e-mail with request for participation included with a link to the survey.

The concepts of the research model are operationalized by the statements found in tables 1, 3 and 5. The complete survey can be viewed in Appendix D. The statements are to be rated on a 5 point Likert-scale. For a few questions a 5-point scale was not appropriate. These questions were asked differently such as: "How often is social media used by employees in the process? Daily 0 Weekly 0 Every two weeks 0 Monthly 0 Less than monthly 0". The respondents are asked to answer the question for a process in which social media is implemented, after which the questions regarding the specific business process that was selected are answered. The questions are constructed considering the guidelines from Bhattacherjee (2012).

3.2.2 Interviews

Interviews are held with several employees of the Belastingdienst. The interviewees can be seen as experts on the subject of processes and/or social media within the Belastingdienst. The interviews are of the semi-structured type. Semi-structured interviews "are usually scheduled in advance at a designated time and location outside of everyday events. They are

generally organized around a set of predetermined open-ended questions, with other questions emerging from the dialogue." (DiCicco-Bloom and Crabtree, 2006, p. 315) There are other interview types, such as the unstructured or structured type, these types will not be used since the structured type is directed at finding quantitative data (p. 314) and the unstructured type is "more or less equivalent to a guided conversation" (p. 315). The semi-structured interviews yield rich case data, that can provide an in depth qualitative insight to the results of the survey.

Chapter 4 – Data Collection

In this chapter the development of the measurement of the survey is explained. Several steps were taken to determine whether the survey was valid and reliable. The demographics of the survey are presented as well.

4.1 Instrument development

This paragraph describes how the survey was constructed. All the statistical analyses in this study were made by using SPSS (Statistical Package for the Social Sciences).

4.1.1 Question construction

The questions in the survey are of the Likert-scale type and as such, are ordinal scale questions. For the questions on organizational benefits, an existing and validated scale was used of Mirani and Lederer (1998). The other concepts in the research model were measured with scales constructed by the researcher. The questions as constructed were critically reviewed within the project team. After several iterations, a statistician from Novay reviewed the final set of questions.

4.1.2 Pre-testing

When the questions were completed, a pre-test was done. The survey was pre-tested by ten people from within BiZZdesign and the Belastingdienst. Preferably, the pre-test would have had more participants. However considering time pressure the decision was made to keep the pre-test small. Further, any respondents to the pre-test would not be able to answer the definitive survey. With the results from this pre-test some adjustments were made. The survey was tested for reliability with Crohnbach's Alpha. Crohnbach's α is a measure of scale reliability. It indicates whether the scale consistently reflects the construct it is measuring (Field, 2005, p.666). When the α-score is 0.7 or above it is seen as valid. The scores for the pre-test were as follows:

Table 6: Pre-Test Crohnbach's α

Construct	α
ORG	0,660
COM	0,780
KNO	0,727
SEC	0,708
REP	0,615
INT	0,982
SOC	-.434*
COL	0,238*
PRO	0,892

The main adjustments were made to the scales for the collaboration characteristic and process socialization, since the Crohnbach's Alpha for these two concepts was too low. For collaboration, a scale by Kahn and Mentzer (1998) was implemented and for process socialization additional questions were added. These questions adjustments were reviewed within the project team once more. Besides the Crohnbach's α analysis, feedback on length, grammar and question clarity of the survey was collected from several consultants at BiZZdesign. With their suggestions, adjustments were made in order of questions and the survey was shortened where possible. This included having to leave out comparison with processes that do not utilize social media. Due to deadlines within the project a second pre-test to test the new questions was not possible. As such, the survey after the adjustments from the pre-test was sent to the contact pool.

4.1.3 Reliability of Final Survey

The sampling method was based on convenience: companies from the contact pool of BiZZdesign, Novay and INZYCHT are approached to answer the survey, as such the survey was sent to approximately 2.500 contacts. The actual response was 190, meaning the response rate is around 7,6%. Some of the respondents indicated their organization did not make use of social media in their processes; these responses were dropped along with responses that were not fully completed. As such, the final analysis was conducted with a sample of 100 responses. To determine the reliability of the measurement indicators of the constructs in the research model, a Crohnbach's Alpha analysis was made. As can be noted from table 7, the α-score for complexity is far too low. Meaning that either the questions for the complexity were not consistent with the concept, or that the answers to those questions were too diverse to yield consistent results. As such, complexity is not considered further in the analysis since it is not certain if it is measured well enough. For knowledge intensity questions 2 and 3 yielded the highest α-score possible for that concept: 0,501.

Table 7: Crohnbach's α

Construct	α
ORG	0,797
COM	0,277*
KNO	0,501
SEC	0,715
REP	0,684
INT	0,757
SOC	0,779
COL	0,882
PRO	0,881

4.1.4 Convergent and Discriminant Validity

There are two more measures to determine whether the measurement scale is reliable. On the one hand convergent validity is taken into account, meaning that "measures of constructs that theoretically should be related to each other are observed to be related to each other. There is correspondence or *convergence* between similar constructs." (Trochim, 2006) On the other hand, there is discriminant validity, which means, "measures of constructs that theoretically should not be related to each other are observed to not be related to each other. There is *discrimination* between dissimilar constructs." (Trochim, 2006)

The inter-correlations among the measurements are analyzed to evaluate these types of validity. The convergent correlations of a measurement scale should always be higher than the discriminant correlations of a scale. The cross-correlation matrix that is used can be found in Appendix B. The red correlations should be lower than the green correlations as the red should be discriminant and the green should converge. As can be noted from the table, the correlation between the measurements of repetitiveness (REP1 and REP2) is lower than acceptable with a score of 0.32, since it is lower than for example the correlation between SEC2 and REP1 with 0.418. The remaining measurements of the other concepts were deemed reliable enough to continue with their analysis.

4.1.5 Data Distribution

Skewness and kurtosis represent the distribution of the data through a measure of shape (Field, 2005, p. 71). The further the values are from zero, the less likely it is that the data is normally distributed. As can be seen in the table, the distribution of the data from the survey is not normally distributed. The consequence of this is that a parametric test is not appropriate to use for analysis of the data. Parametric tests make certain assumptions, including that the data is normally distributed (Field, 2005, p.64). However, the data can still be analyzed by using a non-parametric test. "Such tests make fewer assumptions about the type of data on which they can be used" (Field, 2005, p.521).

Table 8: Skewness and kurtosis

	ORG	*SEC*	*INT*	*COL*	*REP*	*KNO*	*PRO*	*SOC*
Skewness	-,351	-,430	-1,057	-1,033	-,366	-,304	-,639	-,592
Kurtosis	1,481	,398	1,396	3,093	-,408	,019	,901	,369

4.2 Sample demographics

4.2.1 Personal Characteristics

The survey was distributed among customer and contact organizations of BiZZdesign, Novay and INZYCHT. The final sample of 100 participants has the following demographics, as reported in table 6 below. Notably, more males than females answered the questionnaire: 86,3% male 13,7% female. The age of the participants was on the older side, with participants aged 35 to 65 making up 90,2% of the sample.

Table 9: Age distribution

Age	Percent
<25	1,0
25-34	8,8
35-45	26,5
46-55	40,2
56-65	23,5

4.2.2 Organizational Characteristics

The sample consisted of primarily of organizations from the following sectors: business services (28%), financial services (11%), education (10%), public administration (22%), and healthcare (7%). The remaining 29% ranged from logistics to aerospace organizations. As such, the results from the survey can be applied to service organizations, since there is a lack of production oriented businesses in the survey. The majority of the organizations were of a firm size of more than 500 employees (61%).

4.2.3 Processes

The processes that participants selected are diversely situated in organizations. This is positive for the research since with this sample, conclusions about the process socialization can be generalized throughout the organization. Participants indicated business processes within sales, marketing, R&D, HR, finance, production, services, including business processes located other organizations. Only logistics and purchasing are not well represented (4% and 3%, respectively).

Chapter 5 - Data Analysis

In this chapter the actual results of the survey are discussed. Beginning with evaluation of the research model.

5.1 Testing the Relationships

5.1.1 Evaluation of the Research Model

In order to evaluate how much of the relationship is explained by this research model, an R-square measurement is be made. R^2 can be used in order to "measure the amount of variability one variable is explained by the other" (Field, 2005). This measurement can be made only for the first part of the model; for the effect of process characteristics on process socialization. In this case, the R^2 indicates $R^2 = 0{,}102$. This indicator should be interpreted as follows; 10,2% of process socialization can be explained by this model. To put this figure into perspective: this means 89,8% of the variability in process socialization is explained by other factors. This is in line with expectations that other factors influence process socialization as well, such as perceived usefulness or expected benefits of social media that employees have.

5.1.2 Non-parametric Testing

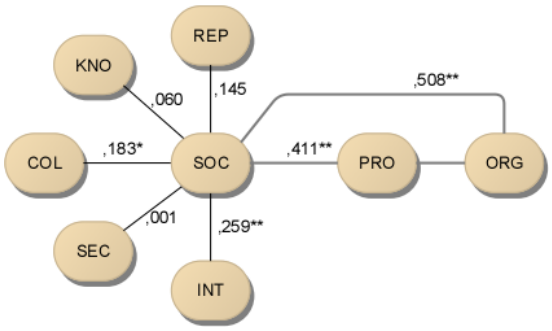
Since the data distribution is determined to be 'non-normal' a non-parametric test is required to analyze the correlations between constructs of the measurement model. Such tests make fewer assumptions about the distribution of a dataset. To measure the correlations, the Spearman's ρ method is used. This is the non-parametric version of Pearson's R. For the full Spearman's ρ table see appendix C. Figure 8 represents the research model including the correlations between each of its concepts, all correlations are one-tailed. The analysis yielded the following results.

Firstly, the correlations between the process characteristics and process socialization are reviewed. As was expected from the preliminary literature research, collaboration is significantly correlated to process socialization, $r_s = .183$, $p < .05$. Customer interaction is significantly related to process socialization as well, $r_s = .259$, $p < .0.01$.

Other characteristics are not significantly related. Especially notable is that there is no relationship between security and process socialization, the correlation coefficient is $r_s = .001$, almost zero, indicating that there is no correlation. On the knowledge intensity and repetitiveness characteristics judgment in relation to process socialization needs to be withheld, since the correlation scores are not significant in this test. However, as stated by

Field (2005, p. 140) “the significance value isn’t that important because the correlation coefficient is an effect size in its own right.”

On the other side of the research model are organizational performance and process performance. Both are found to be positively correlated with process socialization; ORG, r_s = .508, $p < 0.001$ and PRO, r_s = .411, $p < 0.001$.



**. Correlation is significant at the 0.01 level (1-tailed). *. Correlation is significant at the 0.05 level (1-tailed).

KNO: Knowledge intensity	*COM: Process complexity*	*INT: Customer interaction*
COL: Amount of collaboration	*REP: Process repetitiveness*	*PRO: Process Benefits*
SOC: Process socialization	*SEC: Process security*	*ORG: Organizational Benefits*

Figure 7: Research model with correlations

5.2 Case descriptions

The following paragraphs include case descriptions that are based on the interviews that were held at the Belastingdienst. Three different departments participated. FIOD, the Fiscal Intelligence and Investigation Service. ‘BelTel’, or ‘tax-phone’ the department responsible for handling citizen questions, and the CKC, the Knowledge and Communications Center.

5.2.1 Case ‘Social Intranet’

The intranet at the Belastingdienst consists of separated environments for each department. The main body consists of a large collection of content, manuals in particular. These manuals often need to be changed due to regulation adaptations from the government. Rewriting the manuals in the intranet is a very slow process. The Belastingdienst hoped to tackle this problem with social media and in 2006, started implementing social media in their intranet environment. However, their approach was a technology push, as wiki’s, forums, and communities were implemented and free to use without any guidelines. This caused a shift from professional use to informal use, with employees sharing irrelevant information instead of focusing on primary business processes. In the near future, the CKC wants to improve the combination of intranet and social media. One idea is to connect the content with people, by indicating who has knowledge on that particular topic. Another idea is to create pressure on

employees to improve the intranet content, by being able to place comments where content is outdated or needs clarification.

5.2.2 Case FIOD

The FIOD is one of the departments at the Belastingdienst, with its own environment: FIODNET. Process models are included as content, as well as information from the 'police-net', which provide guidelines, such as how to interrogate people. Like the rest of the intranet, it copes with content becoming quickly outdated. However, the users of the content on FIODNET came up with a solution through social media. Instead of waiting for renewal of the documents, newer versions are posted on the forum, with notifications that there are new guidelines or manuals. The forum is used in another way as well: financial detectives share tips and tricks with one another, they share advice to use in the field. Beside these positive developments, not all employees use social media to its full potential. For instance, not all employees are used to logging in daily and responding to social content yet. One characteristic of the social media within the FIOD, is that it enables quick sharing of information within the department itself. However, sharing information with organizations outside their protected environment is difficult. For example, when wanting to share information with the police department this still happens in face-to-face meetings, because of strict security requirements.

5.2.3 Case 'BelTel'

At the 'BelTel' department, social media has not yet taken a prominent place in its business processes. It is cautious towards communication via social media and handles requests through a call center. The reason for this is that there is a need for validated content and the presence of the Belastingdienst needs to be approachable by all civilians. However, social media still affected the 'BelTel' indirectly. Because of the lack of answers through social media, a community started compiling its own Q&A on tax issues, to the extent that civilians found better answers to their questions there than through the 'BelTel' call center. In order to improve its handling of civilian questions, this department has analyzed the questions that the call center receives. At the moment, five particular types of questions were found to be dominant. With this new categorization of questions, answers can be delivered more easily. The idea is to reduce pressure on the call center in busy times, by making basic answers available through the website or social media.

5.3 Evaluation of the Hypotheses

In this section an overview is given of the results of the survey and the outcomes are contrasted with the results from the interviews with the Belastingdienst where appropriate.

Firstly, the hypotheses a - f are addressed. The analysis of these hypotheses address the first research question: *How are the characteristics of business processes correlated with process socialization?*

Table 10: Hypotheses outcomes

Hypothesis	Statement	Conclusion
Hypothesis a	The more knowledge intensive a business process is, the more receptive it is to process socialization	No confirmation*
Hypothesis b	The less repetitive a business process is, the more receptive it is to process socialization	No confirmation**
Hypothesis c	The more complex a business process is, the more receptive it is to process socialization	No confirmation*
Hypothesis d	The more collaboration in a business process, the more receptive it is to process socialization	Accepted
Hypothesis e	The less security is required in a business process, the more receptive it is to process socialization	Rejected
Hypothesis f	The more customers are interacted with in a process, the more receptive it is to process socialization	Accepted

*α-score too low for this concept to accept or reject hypothesis

**convergent validity too low for this concept to accept or reject hypothesis

As noted in the table above, it was not possible to achieve definitive results to either confirm or reject hypothesis a, b and c. This outcome means that new tests need to be performed to complete the analysis of these parts of the research model. Nevertheless, for knowledge intensity, repetitiveness and complexity better scales need to be constructed with which new analysis of these constructs can be made. By using better scales for a follow up analysis the research model as it is can be strengthened.

Collaboration among employees in a process and process socialization are confirmed to have a positive relationship. This outcome confirms the expectation from hypothesis d.

It seemed plausible from literature to expect a negative correlation between security needs of a process and the use of social media. Nevertheless, it has become apparent that social media is used in processes that have high security as well. As such, the hypothesis e is rejected.

Last on the list of characteristics is customer interaction. As confirmed by the analysis there is a positive relationship between customer interaction and process socialization.

On the other side of the model, the relationship between process socialization and process and organizational benefits was measured. Hypotheses g and h were formulated in order to answer the question: *How does process socialization impact the performance of the organization and processes?*

Table 11: Hypotheses outcomes continued

Hypothesis	Statement	Conclusion
Hypothesis g	The higher the socialization of a process, the more positive effect it has on process outcomes	Accepted
Hypothesis h	The higher the socialization of a process, the more positive effect it has on organizational outcomes	Accepted

As noted in the table above, both hypothesis g and h are accepted, there is a positive correlation between the concepts as measured by survey. As such, process socialization is found to have a positive relationship with both organizational benefits and process benefits. Meaning that an organization where process socialization is higher, notes social media to have a positive effect on organizational and process performance.

Chapter 6 – Discussion and Conclusion

6.1 Discussion

This discussion covers the main answers to the research question, followed by the conclusion. The conclusion gives an overview of the implications of the research for theory and practice. Even though not all hypotheses were confirmed or accepted, it is interesting to discuss the implications, together with examples from the cases at the Belastingdienst.

6.1.1 How do the characteristics of business processes influence process socialization?

Considering the influence of knowledge intensity on process socialization, it seems logical that the more knowledge is necessary in processes, the more social media can assist in finding and sharing knowledge. The reasons mentioned for using social media in the cases at the Belastingdienst are primarily related to knowledge sharing. Such as sharing suggestions on work procedures with others and keeping content updated as fast as possible.

When looking at repetitiveness, Smith and Drakos, 2012, p. 2 indicate that processes that follow a tight script will not benefit from integration of social media functions. It has not been possible to confirm this, since the convergent validity of the survey items were too low. Looking at the processes at the Belastingdienst, both repetitive and unique processes can be complemented with social media. In the case of the call center, routine questions could be answered through social media. Or financial detectives can share their experiences within FIODNET, even though each encounter is unique.

From this study it has become clear that complexity is a difficult to define concept. It is also difficult to measure in relation to processes. However, from literature research it is probable that the more complex a process is, the more helpful social media can be for the process. The reason behind this idea, is that complex issues require more thought and communication in order to carry out.

From the correlations in the survey results, it is clear that there is a relationship between process socialization and collaboration within a process. This finding confirmed the hypothesis. When it is necessary to share and collaborate with each other within a process, it seems natural that tools providing an easier way to collaborate would support such processes. Especially when collaborating with colleagues in other locations.

The findings on the use of social media in processes that work with confidential information or are tightly regulated are perhaps the most interesting of this study. Particularly since the correlations indicated that there is no relationship between security requirements in a process and process socialization. Meaning that social media is used in any process, regardless of security requirements. The findings at FIOD provide an example of social media use in

processes that utilize confidential information. In this branch of the Belastingdienst tax evaders are traced and often interrogated. The financial detectives share their thoughts on processes that are carried out. If problems or questions arise, an on-line forum is used to consult each other.

Lastly, even though the interaction of customers with a process was not specifically mentioned in the reviewed literature, it has, as expected, a relationship with process socialization. This is confirmed to be an important concept to consider when discussing process socialization. Social media is however, not only used for marketing purposes. Organizations can, for example, can use customer input to improve products or services. Or use social media to provide services, such as interactive Q&A.

6.1.2 Does process socialization influence process and organizational performance?

The findings on the benefits of process socialization were most conclusive of all results. In organizations where process socialization was higher, respondents indicated positive effects on process benefits as well as organizational benefits. Although the confidence in the benefits of social media in processes where socialization is high, a causal effect cannot be proven yet. These findings need to be strengthened with quantitative measures. Since currently, the opinions of employees on the effects of social media were measured. The expectation of benefits of social media was also found with the Belastingdienst. In all departments, the intention is to implement or expand social media in processes. Based on these outcomes, social media can be expected to be increasingly common in organization in the coming years.

In summary, the outcomes that were significant lead to figure 8.

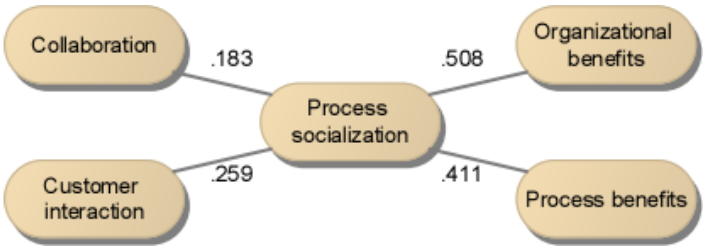


Figure 8: Concluding Research Model

6.2 Conclusion

6.2.1 Implications for Theory

Currently, the outcomes of this survey suggest that companies mainly use social media in processes that require collaboration and in which there is a certain interaction necessary with customers. It also appears that security is not a barrier to process socialization. The finding on

collaboration confirmed the expectations from other authors, such as Alonso, Agrawal, Abbadi and Mohan (1997). The findings on security disagree with the statements of Smith and Drakos (2012), that security prohibits the use of social media in organizations and business processes. In fact, this study suggests there is no relationship between process socialization and security at all.

The process types that are distinguished in literature such as structured vs. unstructured processes are not appropriate for decision making on process socialization. Considering the findings from this study, it seems better suited to distinguish between interactive and non-interactive processes. The reason for this is that interaction with customers and collaboration among employees are the most important factors when considering social media. When looking at processes in this sense, it is appropriate to implement social media, when interactivity, or the need for interaction, between people in a process is high.

The importance of social media to organizations is confirmed. Since respondents have stated that use of social media has its benefits in business processes and in organizations. Considering these findings, further exploration on the use of social media in organization and processes is warranted. McAfee has made a start, looking at Enterprise 2.0 back in 2006, with the implementation of Web 2.0 technology in organizations. This research topic can now be expanded to process socialization, in order to gain a deeper understanding of the way social media can support business processes. Through the creation of a new measurement scale for process socialization, this study opens up some ways to approach this type of research in the future.

6.2.2 Implications for Practice

Some direct advice can be given to businesses based on the outcomes of this study. As mentioned before, the interactivity in a process is most important when considering process socialization: When deliberating the implementation of social media in a process, it is key to identify whether there is interaction between employees within the process or with customers to determine if the use of social media is appropriate in a process. As mentioned before, security does not seem to influence process socialization and is not necessarily a barrier to successful implementation. It should be noted, that as with the Belastingdienst back in 2006, giving employees a sense of direction when implementing social media is essential. Only providing a platform is not sufficient. Employees might start using these media for personal and informal uses, instead of the supportive function management might have in mind for its business processes.

Further, it seems that organizations are driven by consumer implementation of social media, and the organizations are followers in this aspect. As happened at the 'BelTel', the companies can still lag behind its customers or clients. When customers have questions that result from business processes and need to turn to one another on-line, steps need to be taken to improve services. In such cases, service through social media channels needs to be provided.

Besides these direct implication for organizations, process socialization also has implications for BPM methods. As more companies start using social media, a social approach to BPM will likely start playing a larger role in the coming years. As Schmidt and Nurcan (2009) explain "social software may support business process management itself" (p. 650). This relationship is linked to implementing social software within the BPM life cycle (p. 656). For example in the design phase, "fusioning capabilities of social software can be used to create a specification that better integrates the needs of all stakeholders." Or in the evaluation phase "social software enhances the collection of suggestion for improvements because each collection can be instantly evaluated by all stakeholders."

Since social media is assumed to influence processes, the question has arisen whether BPM languages should include new notations that support display of social media usage in a process? Brambilla, Fraternali, Vaca (2012), have suggested one example of including social notations in BPMN. "By enriching the existing BPMN concepts with a social meaning, it is possible to achieve a visual language that is both familiar to BPMN practitioners and possess enough expressive power to convey social design patterns" (p. 222). Another suggestion of a new notation is made by Bruno et al. (2011), proposing to integrate cooperative actions in the UML Language by the tagging of process items with the <<cooperative>> stereotype (p. 315).

6.3 Limitations

There are several limitations to this type of exploratory study and the methods of data collection. Firstly, respondent bias: "if the informant chosen does not have adequate knowledge or has a biased opinion about the phenomenon of interest." (Bhattacherjee, 2012, p. 74) In this case, respondents have to make their own judgment on the effect of social media. As such, the organizational and process outcomes are subjectively measured, as the boundaries of this research did not allow for collecting items such as ROI of each company before and after social media implementation. Another bias that is related to the respondents bias is that there is a chance that respondent do not have complete the knowledge on all the

concepts that are presented. However, in the on-line survey, notes to clarify certain concepts were included for clarification in an effort to reduce this bias.

Secondly, only correlations are presented in this exploratory study the results are collected at one point in time; so it cannot measure an actual cause and effect of social media on increase or decrease in performance and causal relationships cannot be proven.

Thirdly, the survey was held under Dutch organizations and the interviews were held with the Belastingdienst. As such, the outcomes of this study cannot be generalized to other countries. For example, security outcomes could be very different in other countries with more strict regulations on information exchange.

6.4 Future Research

This research is among the first steps in analyzing social media usage in business processes. There are several research opportunities in the development of social media for business processes. For example, by studying which types of social media are most suitable for which processes and how to effectively implement and model the use of social media in business processes.

On this particular study in particular, it is necessary to increase the rigor of some of the concepts. Finding better measures for knowledge intensity, repetitiveness and complexity of business processes. Further research could strengthen the findings by comparing the outcomes in different branches, since in the survey mainly service type businesses and public organizations participated. As such, there is an opportunity to research process socialization in production and manufacturing oriented organizations. The same holds for comparison with other countries, as this survey was only answered by organizations based in the Netherlands.

At this point, the perceptions of benefits of social media were measured, but the perception of respondents can differ from data that are more factual. Findings from this study need support from more quantifiable research, such as measures of ROI in companies that use social media in certain processes and others that do not. Another option would be to compare case organizations with similar business processes, with one organization using social media and the other not using social media.

Lastly, it needs to be mentioned that other factors determine process socialization as well. From the R^2 measurement it became clear that 10,2% of process socialization is explained by the process characteristics found. Other research can be complementary on what factors influence the decision to implement social media in business processes.

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Appendix A – Social Media Types

Table 12: Social Media Types

	Virtual worlds	Blogs	Micro-blogging	Content Aggregators	Communities	Social Networking	Professional networks	Collaborative projects	Forums / Groups	Tags	Wikis
Lehtimäki et al. (2009)	√	√		√	√	√					
Carlsson (2010)		√	√	√	√	√	√				
Kaplan and Haenlein (2010)	√	√			√	√		√			
Constantinides (2010)		√		√	√	√			√		
Mayfield (2008)		√	√	√	√	√			√		√
Caputo (2009)				√		√				√	√
Gilchrist (2007)		√		√						√	√
Razmerita et al. (2009)		√		√		√				√	√

Appendix B – Construct Cross-Correlation Matrix

Table 13: Construct cross-correlation matrix

		KNO1	KNO2	SEC1	SEC2	SEC3	REP1	REP2
KNO1	Correlation Coefficient	1.000						
	Sig. (1-tailed)							
KNO2	Correlation Coefficient	,292**	1.000					
	Sig. (1-tailed)	.002						
SEC1	Correlation Coefficient	-.025	-.022	1.000				
	Sig. (1-tailed)	.401	.414					
SEC2	Correlation Coefficient	.161	-.139	,447**	1.000			
	Sig. (1-tailed)	.055	.084	.000				
SEC3	Correlation Coefficient	.141	.073	,409**	,591**	1.000		
	Sig. (1-tailed)	.081	.236	.000	.000			
REP1	Correlation Coefficient	-,339**	-,250**	-.086	-,220*	-,305**	1.000	
	Sig. (1-tailed)	.000	.006	.196	.014	.001		
REP2	Correlation Coefficient	-.153	-,281**	,418**	,327**	,216*	.032	1.000
	Sig. (1-tailed)	.064	.002	.000	.000	.015	.377	
INT1	Correlation Coefficient	,281**	.134	-.085	,180*	,245**	-,231*	.023
	Sig. (1-tailed)	.002	.092	.200	.037	.007	.011	.411
INT2	Correlation Coefficient	,347**	,275**	-,183*	.043	-.033	-.116	-.060
	Sig. (1-tailed)	.000	.003	.034	.336	.373	.126	.278
COL1	Correlation Coefficient	.119	.045	-.039	.016	-.039	.024	,192*
	Sig. (1-tailed)	.120	.328	.351	.438	.352	.406	.028
COL2	Correlation Coefficient	.099	.026	-,211*	-.029	-,192*	.090	.010
	Sig. (1-tailed)	.163	.400	.018	.386	.028	.186	.460
COL3	Correlation Coefficient	.023	.122	-,294**	-,173*	-,288**	.076	-.016
	Sig. (1-tailed)	.410	.114	.002	.042	.002	.225	.438
COL4	Correlation Coefficient	.132	,173*	-,240**	-.068	-,185*	.134	-.067
	Sig. (1-tailed)	.095	.043	.008	.250	.033	.093	.253
COL5	Correlation Coefficient	.105	.021	-,339**	-.052	-.107	.119	.038
	Sig. (1-tailed)	.149	.419	.000	.305	.146	.119	.352
COL6	Correlation Coefficient	.004	.014	-.043	.040	-.016	.114	,180*
	Sig. (1-tailed)	.484	.446	.334	.345	.436	.129	.037

**. Correlation is significant at the 0.01 level (1-tailed). *. Correlation is significant at the 0.05 level (1-tailed).

Table 12: Construct cross-correlation matrix (continued)

		INT1	INT2	COL1	COL2	COL3	COL4	COL5	COL6
INT1	Correlation Coefficient	1,000							
	Sig. (1-tailed)								
INT2	Correlation Coefficient	,610**	1,000						
	Sig. (1-tailed)	,000							
COL1	Correlation Coefficient	,179*	,108	1,000					
	Sig. (1-tailed)	,037	,143						
COL2	Correlation Coefficient	,215*	,342**	,488**	1,000				
	Sig. (1-tailed)	,016	,000	,000					
COL3	Correlation Coefficient	,197*	,350**	,290**	,541**	1,000			
	Sig. (1-tailed)	,025	,000	,002	,000				
COL4	Correlation Coefficient	,289**	,374**	,374**	,638**	,665**	1,000		
	Sig. (1-tailed)	,002	,000	,000	,000	,000			
COL5	Correlation Coefficient	,298**	,309**	,451**	,431**	,420**	,443**	1,000	
	Sig. (1-tailed)	,001	,001	,000	,000	,000	,000		
COL6	Correlation Coefficient	,201*	,196*	,581**	,468**	,479**	,585**	,641**	1,000
	Sig. (1-tailed)	,023	,025	,000	,000	,000	,000	,000	

**. Correlation is significant at the 0.01 level (1-tailed). *. Correlation is significant at the 0.05 level (1-tailed).

Appendix C - Spearman's ρ

Table 14: Spearman's ρ

Spearman's ρ		*ORG*	*SEC*	*INT*	*COL*	*REP*	*KNO*	*PRO*	*SOC*
ORG	Correlation Coefficient	1,000							
	Sig. (1-tailed)	.							
SEC	Correlation Coefficient	,030	1,000						
	Sig. (1-tailed)	,385	.						
INT	Correlation Coefficient	,237**	,056	1,000					
	Sig. (1-tailed)	,009	,291	.					
COL	Correlation Coefficient	,160	-,210*	,347**	1,000				
	Sig. (1-tailed)	,055	,018	,000	.				
REP	Correlation Coefficient	,076	,514**	-,076	-,021	1,000			
	Sig. (1-tailed)	,225	,000	,225	,419	.			
KNO	Correlation Coefficient	-,020	,014	,353**	,105	-,252**	1,000		
	Sig. (1-tailed)	,420	,446	,000	,149	,006	.		
PRO	Correlation Coefficient	,633**	,052	,165	,129	,079	,038	1,000	
	Sig. (1-tailed)	,000	,304	,051	,101	,217	,353	.	
SOC	Correlation Coefficient	,508**	,001	,259**	,183*	,145	,060	,411**	1,000
	Sig. (1-tailed)	,000	,496	,005	,034	,075	,277	,000	.

**. Correlation is significant at the 0.01 level (1-tailed). *. Correlation is significant at the 0.05 level (1-tailed).

Appendix D – Survey

Deze enquête betreft een onderzoek dat we momenteel uitvoeren naar het gebruik van enterprise social media en de impact daarvan op de organisatie en de persoonlijke effectiviteit. Daarmee duiden we sociale media aan die binnen of direct gerelateerd aan de organisatie worden gebruikt.
De resultaten van het onderzoek zullen alleen ten behoeve van dit onderzoek worden gebruikt en zijn vanzelfsprekend geheel anoniem. Invullen duurt 10-15 minuten.
Indien u prijs stelt op de resultaten van dit onderzoek kunt u dit aan het einde van de enquête aangeven en uw e-mail adres achter laten. Ook kunt u aangeven of u mee wilt dingen naar een van de drie Dinercheques van €50,- die onder de respondenten worden verloot.
De enquête bestaat uit 3 delen. Algemene vragen over uw organisatie, daarna over de inzet van sociale media in processen en tenslotte over de persoonlijke impact daarvan.

Deel II – Bedrijfsprocessen en Social Media
Dit onderdeel betreft het gebruik social media in bedrijfsprocessen en de resultaten van dit gebruik. Er wordt hierbij gedoeld op professioneel gebruik van social media; dus werkgerelateerde communicatie via social media.

Voorbeelden social media:
Microblogging (zoals Twitter, Yammer)
Sociale netwerken(zoals Facebook, LinkedIn)
Wiki's (zoals Wikipedia, internal wikis)
Social Bookmarking/Tagging (zoals Delicious, GoogleReader)
Events (zoals Meetup.com, Eventful)
Social News (zoals Digg)
Photo Sharing (zoals Flickr)
Video Sharing (zoals YouTube)
Livecasting (zoals Ustream.tv, Skype)

Voor bedrijfsprocessen wordt gedoeld op processen zoals beschreven in BPM(business process management): een reeks activiteiten, met een specifiek doel en resultaat, dat kan lopen over één maar ook meerdere afdelingen en organisaties.

Voorbeelden bedrijfsproces:
Vacature vervullen (HR)
Afhandelen schadeclaim (Service)
Ontvangen en verwerken van een order (Sales/Logistiek)
Leveranciers selecteren (Inkoop)
Product ontwikkeling (R&D)

Neem voor de volgende vragen een specifiek voorbeeld van een bedrijfsproces waarin social media een rol spelen. Wat is de naam/omschrijving van dit bedrijfsproces?

In welke afdelingen/organisaties bevindt het bedrijfsproces zich? (meerdere keuzes mogelijk)

Verkoop	Logistiek
Marketing	R&D
HR	Finance
Productie	Inkoop
Service	Andere organisaties
Overige	

Geef voor het gekozen bedrijfsproces aan in hoeverre u het eens bent met de volgende stellingen.
Zeer mee oneens 0 0 0 0 0 Zeer mee eens

REP1 Er zijn duidelijke procedures en stappen voor het bedrijfsproces
REP2 Het bedrijfsproces is geautomatiseerd

KNO1 De kennis die nodig is in het bedrijfsproces is gedocumenteerd in manuals en rapporten
KNO2 Het bedrijfsproces is afhankelijker van kennis dan infrastructuur (machines, grondstoffen)
KNO3 Het bedrijfsproces vereist impliciete, moeilijk overdraagbare kennis
KNO4 het bedrijfsproces vereist expliciete, gemakkelijk overdraagbare kennis

COL1 Werknemers in het bedrijfsproces behalen hun doelen gezamenlijk
COL2 Werknemers in het bedrijfsproces hebben wederzijds begrip voor elkaar
COL3 Werknemers in het bedrijfsproces werken informeel samen
COL4 Werknemers in het bedrijfsproces delen ideeën, informatie en/of andere middelen
COL5 Werknemers in het bedrijfsproces hebben dezelfde visie voor het bedrijf
COL6 Werknemers in het bedrijfsproces werken samen als een team

COM1 Het bedrijfsproces is vatbaar voor veranderingen
COM2 De output van het bedrijfsproces is de input van een ander bedrijfsproces
COM3 Er zijn uitzonderingen in het bedrijfsproces

SEC1 Het bedrijfsproces heeft privacy aspecten
SEC2 Het bedrijfsproces werkt met vertrouwelijke informatie
SEC3 Het bedrijfsproces heeft te maken met regelgeving

SOC1 Social media is een standaard onderdeel van het bedrijfsproces
SOC2 Social media wordt voor bepaalde taken in het bedrijfsproces ingezet
SOC3 Voor de taken waar social media ingezet is, wordt het ook gebruikt
SOC4 Hoe vaak wordt social media gebruikt door werknemers in het bedrijfsproces

INT1 Het bedrijfsproces vereist interactie met de klant

INT2 Het proces maakt gebruik van feedback van klanten

PRO1 Social media verhoogt informatiedeling in het bedrijfsproces

PRO2 Social media verhoogt de snelheid van beslissingen in het bedrijfsproces

PRO3 Social media zorgt voor effectievere samenwerking in het bedrijfsproces

PRO4 Social media zorgt voor efficiëntere omgang met uitzonderingen in het bedrijfsproces

PRO5 Werknemers in het bedrijfsproces worden vaker aangesproken op hun verantwoordelijkheden

PRO6 Social media verhoogt de kennisdeling in het proces

ORG1 Social media verbeterd het concurrentievermogen van de organisatie

ORG2 Social media zorgt dat de organisatie sneller kan reageren op veranderingen

ORG3 Social media verbeterd de relatie met klanten

ORG4 Social media zorgt dan informative (zoals rapporten) sneller kan worden opgevraagd

ORG5 Social media verhoogt de nauwkeurigheid van informatie

ORG6 Social media verlaagt de communicatie kosten

ORG7 Social media verhoogt de productiviteit van werknemers

ORG8 Social media verlaagd kosten door verminderen van personeel