FACTORS IMPACTING ADOPTION OF SOCIAL COMMUNICATION TECHNOLOGIES

IN ORGANIZATIONS: A MIXED METHODS STUDY

A Dissertation Presented in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Management

By

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October, 2014

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UMI Number: 3669270

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Ann Arbor, MI 48106 - 1346

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Abstract

Organizations are increasingly adopting social communication technologies (SCT) such as private social-networking sites and social software to enable their members to interact, share information and collaborate. The problem addressed in this study is the limited understanding of reasons of slow SCT adoption for internal communication in comparison to the external diffusion of these technologies. The purpose of this study is to discover social software adoption factors and analyze whether some of them have a significant impact on the SCT adoption rates in organizations. The theoretical foundation for this research is based on a few theories, including the diffusion of innovations (Rogers, 1962, 1983, 2003) and technology-organization-environment framework (Tornatzky, Fleischer & Chakrabarti, 1990). The study uses the concurrent mixed methods design, applies a set of qualitative (digital ethnography) and quantitative (structured survey) instruments, statistical methods (correlation, regression, and content and interpretive analysis). Data was collected from representatives of various types of organizations that employ social software or social intranet.

As a result of the content analysis and interpretive phenomenological examination of data, the author offers the classification of factors encountered by practitioners during the process of social software adoption in organizations. The suggested classification is not a social software adoption model or a comprehensive hierarchy of all factors, but just a necessary step in creating of such model.

As a result of quantitative analysis of data, which included correlation and regression analyses, the researcher has established that some of the factors have little impact on adoption rates (industry with $rho = 0.132$, $p. = 0.451$) or low level of correlation with adoption rates

(symmetrical communication structure with *rho* = - 0.309, *p.*= 0.071). Other factors should be added to the SCT adoption model to serve as predictors of how fast employees will adopt social software inside the organization. Among them are: organizational structure (*rho* =0.584), asymmetrical communication structure (*rho* = 0.517, *p.* = .001) and organizational size (*rho* = 0.412, *p.* = .001). In addition, the author made meta-inferences that utilized two techniques for triangulation, by bringing together data from qualitative and quantitative components of the study.

Acknowledgements

This research and writing of the dissertation was primarily a lonely affair, but it was not possible without the assistance from family, friends, other researchers and professors. I am especially grateful to my husband who supported me emotionally and financially. I also admit my guilt to my two daughters who endured many hours without a mother, often on short notice, while I completed my research and dissertation.

I would like to acknowledge my mentor, Dr. Brian Forsyth, who was instrumental in assisting me in this taxing endeavor, and who was always ready to offer his advice or just to listen. I would like to express my gratitude to members of the Dissertation Committee, Dr. Lee R. Viar and Dr. Christina Anastasia, for their valuable comments. I must thank all my former co-workers and professors from Colorado Technical University, who were always willing to share their knowledge about research and writing. Each of them has given me their valuable time, their, expertise or they provided moral support.

Finally, I appreciate the members of my growing network of social strategists, intranet and community managers, and social media researchers who responded to my surveys, agreed to be interviewed or discussed passionately their efforts to implement social software in organizations.

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CHAPTER ONE

With the advent of communication technology, new virtual organizations with different

from traditional organizations' structures and cultures are emerging. In the same time,

organizational processes and existing structures such as knowledge management, learning,

professional development and communication are in a stage of transformation with employees

dispersed globally. These new virtual organizations or organizations with employees separated

by time zones and geographic locations are in need of new communication tools. That is why

diffusion of new communication technologies is widely considered to be one of the primary

reasons for transforming the way many companies operate. Some businesses decide to invest in

social communication technology in the hope to stimulate employees' engagement, information

sharing, innovations, professional development and building organizational networks or

communities of practice (CoP). In efforts to build platforms for CoP, organizations employ

existing intranet tools and also acquire commercial social software or develop social

communication technologies (SCT) in-house.

Background of the Study

Numerous surveys conducted by consulting and research organizations show that the use

of social media by corporate entities is on the rise. However, statistics revealed the majority of

companies use social communication technology (SCT) primarily for external and less for

internal communication inside organizations. According to the Social Media Survey of

executives and board members in North American companies, conducted by Stanford University

and the Conference Board in 2012 (Lacker, Lacker & Tayan, 2012), only 38.1% of respondents

confirmed that their companies use SCT for internal communication (compared to 59% of

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surveyed companies which use social media to interact with customers, and 49% to advertise or market their products). The study did not ask about the scope and the level of use of SCT in companies, so, in reality, the number of businesses which truly employ SCT internally and offer employees opportunities to join private or corporate social networking sites, to comment or blog within intranets, could be even lower.

Multinational corporations have been among the first to implement intranets (Damsgaard & Scheepers, 1999; Lyytinen, Rose & Welke, 1998; Newell, Swan, Scarbrough, 2001). Large companies with plenty of in-house information technology (IT) resources introduced advanced intranets (Karlsbjerg , Olsen, & Damsgaard, 2001). Early on, some intranet portals included elements of SCT. According to Ethan McCarty, Senior Manager of Digital and Social Strategy at IBM (Melcrum, 2013), IBM has had an intranet for more than 25 years [sic.1981] and even back then it had social computing tools such as chat and forums. IBM inaugurated its recurring "World Jam" back in 2001. This virtual brainstorming event invited employees from around the world to participate in a moderated forum. Drakos, who authored the Gartner's report "Hackathons, World-Jams, and Mashup Days can fit your collaboration strategy" in October 2007, comments, "these events encourage innovation and engage younger employees, the ones most likely to adopt social media tools" (p.12).

Not all companies embrace social intranet. Social intranet could be defined as the intranet with social tools that are utilized by the majority of employees. Even with the rapid development of intranet, only 44 % of businesses have a full portal solution, according to the Social Intranet Study (Ward, 2013), and only 4% implemented social intranet. According to the same survey, 71 % of companies have at least one social tool for some or all employees.

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Introducing social intranet platforms does not guarantee that employees will use them. In 2011, researchers from Forrester Research polled 4,985 U.S. information workers about their use of enterprise social platforms (social intranets) for "The Enterprise 2.0 User Profile: 2011 study" (Keitt, Brown, Koplowitz, & Martyn, 2011). The results show that only 28 percent of workers use social software at least monthly. Additionally, the Forrester study (2011) reveals that "only 22 percent of those who use these tools report the technologies are vital to their jobs " and "they remain on the periphery of the information worker's workflow" (p.21). According to another study completed by the Social Business Council/Dachis Group in 2012, a mere 10 to 20 percent of eligible workers actively use a company's social intranet. What factors are responsible for slow adoption rates of social communication technology or social media within organizations?

Problem Statement

As abovementioned numerous surveys and studies of social media in organizations (Forrester, 2011; Dachis Group, 2012; Stanford University, 2012, Ward, 2013) demonstrate, the use of social communication technology inside organizations for collaboration, communications and learning is limited, and engagement rates are low in comparison to deployment of these communication tools outside of organizations, at open social networking sites. Therefore, this study attempts to establish the reasons behind this slow internal diffusion of SCT by tracing the relationship between adoption rates and some of the organizational factors, and by gathering and analyzing all factors that impact adoption process.

The problem addressed by the study is that organizational managers, people who are enlisted to implement social software, and researchers currently lack complete understanding of all factors that are crucial for successful implementation of SCT in organizations. As meta-analysis of existing empirical studies of diffusion of SCT in organizations shows (Table 2),

scholars primarily focused on exploring individual antecedents of adoption. Another frequently examined factors are technology attributes such as users' perceptions of technology, technology usefulness, and users' needs and experiences with SCT. The author hypothesizes that, since social media adoption rates outside of organizational boundaries are high, there are factors that slow adoption that are unique to organizational use. There is a need to create SCT adoption model that includes organizational and environmental factors in order to understand the process of SCT adoption inside organizations.

Purpose of the Study

The intent of the study is to discover the multitude of factors that affect social software adoption and to establish a relationship between some of the organizational factors and SCT adoption rates. The author of the empirical study attempts to fill the knowledge gap by validating the determinants of organizational SCT adoption that have not been previously taken into account: organizational and communication structures. The purpose of the study is to increase awareness about determinants and the consequences of introducing of SCT in organizations

As the use of SCT becomes prevalent, the adoption of new SCT in organizations may create both opportunities and difficulties. SCT may reduce distance barriers that have traditionally limited the interactions between individuals and across organizations with distributed workforces. While SCT may encourage the flow of information and supports collaboration and transparency, they also increase 'information noise" and lead to information overload. SCT could be "disruptive" technologies for organizations, changing not only the patterns of communication but creating a conflict between a new communication structure and an organizational structure, processes and workflow.

The study might help organizations to maximize the effectiveness of the resources they direct toward furthering SCT implementation. In addition, it could be useful for creators of social software or social intranet platforms.

Theoretical Support for the Study

The proposed conceptual framework describing the technology adoption or implementation process derives from the intellectual interplay between theoretical and empirical studies discussed in the literature review. As the conducted literature review shows, there is a need in a complex model of SCT adoption in an organization that includes all determinants of technology adoption and addresses the importance in various technology implementation stages. Currently, scholars pay less attention to organizational and technical variables and concentrate more on adoption of SCT at an individual level. Researchers primarily apply the theory of diffusion of innovation (DOI) (Rogers, 1962; 1983, 2003); the Technology Acceptance Model (TAM) (Davis 1986, Davis 1989, Davis et al. 1989; Zhou, 2008), the Unified Theory of Acceptance and Use of technology (UTAUT) (Venkatesh et al. 2003; Curtis et al., 2010), and the Technology-Organization-Environment (TOE) framework (Tornatzky, Fleischer & Chakrabarti, 1990) or develop models that are based on modifications of these theories. This empirical study is guided by the contingency theory (Thompson, 1967; Woodward, 1965), DOI (Rodgers, 1962; 2005), and TOE framework (Tornatzky, Fleischer & Chakrabarti, 1990), but does not ignore other relevant theoretical models.

Although, many authors have examined a range of factors influencing SCT adoption, the whole spectrum of determinants has not yet been considered. In order to explain organizational adoption of social media, the author attempted to find out what other factors are important for

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implementers of SCT in organizations. The study focuses on the relationship between the organizational size, structures (communication and organizational), affiliation with industry, and SCT adoption rates. Given the plethora of appropriate organizational-level theories, it is possible to weave together their elements into an explanatory model. The author suggests that even if many internal and external factors influence adoption, the match between organizational factors and affordances of technologies is imperative for high adoption rates, particularly in the beginning of the implementation of SCT in organizations.

Research Questions and Hypotheses

The aim of the research study was to create a model of adoption of social software in organizations, to identify possible factors that impact adoption process and to clarify the role between organizational and communication structures and the sizes of these organizations in adoption of social media in organizations. This broad research objective allowed the researcher to posit the following research questions

- What are the principal factors that affect social software adoption?

- Which factors do facilitate the adoption of SCT and decrease adoption rates?

- Which factors do inhibit SCT adoption and increase adoption rates?

These questions were answered using concurrent mixed method research design. During the qualitative part of the study, the researcher used ethnographic methods. She made observations, collected and analyzed both archival documents and the perceptions of people who were in charge of implementation of social software in organizations. Based on the literature review and an analysis of empirical studies, three factors (organizational size, organizational structure, and

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communication structure) were chosen for quantitative analysis and testing of the following hypotheses:

Hypothesis 1 (H_a): Asymmetric communication structure is positively related to the adoption of social software

Hypothesis 2 (H_a): Symmetric communication structure is negatively related to the adoption rates of social software

Hypothesis 3 (H_a): Adoption rates of social software are positively related to hierarchical organizational structure

Hypothesis 4 (H_a): Organizational size is positively related to SCT adoption rates

Organizational structure has not yet been regarded as a factor in empirical studies of diffusion of social communication technologies. However, it was considered as an influence during the process of adoption of other types of technology. Daft (2013) lists the following dimensions of organizational structure: centralization, formalization, specialization, standardization, hierarchy of authority, complexity, professionalism, and personnel ratio. Internal characteristics of organizational structure include, according to Rogers (1995), centralization, complexity, formalization, interconnectedness, organizational slack, and size. Among most studied aspects are centralization and formalization. Centralization refers to the degree that the power and decision making are distributed between members of the organization (Schminke, Ambrose, & Cropanzano 2000). Formalization described as the degree of emphasis placed on rules and procedures by Rogers (1995).

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Organizational communication structure defined in this study as a configuration of communication relationships between organizational members. In the context of communication studies, historically, communication structure could be categorized as centralized and decentralized, vertical and horizontal, formal and informal. A centralized structure has been outlined as one in which interactions are initiated and mediated by the top management. A decentralized structure allows immediate feedback and error-correction (Tushman, 1979). Grunig (1992; 2002) offered symmetrical and asymmetrical communication models and used two important dimensions to explore internal communication structure. Symmetrical communication in organizations is two-way and horizontal, and asymmetrical is, in contrast, one-way and vertical or top-down.

Figure 1

The Relationship between Variables in the Quantitative Part of the Study
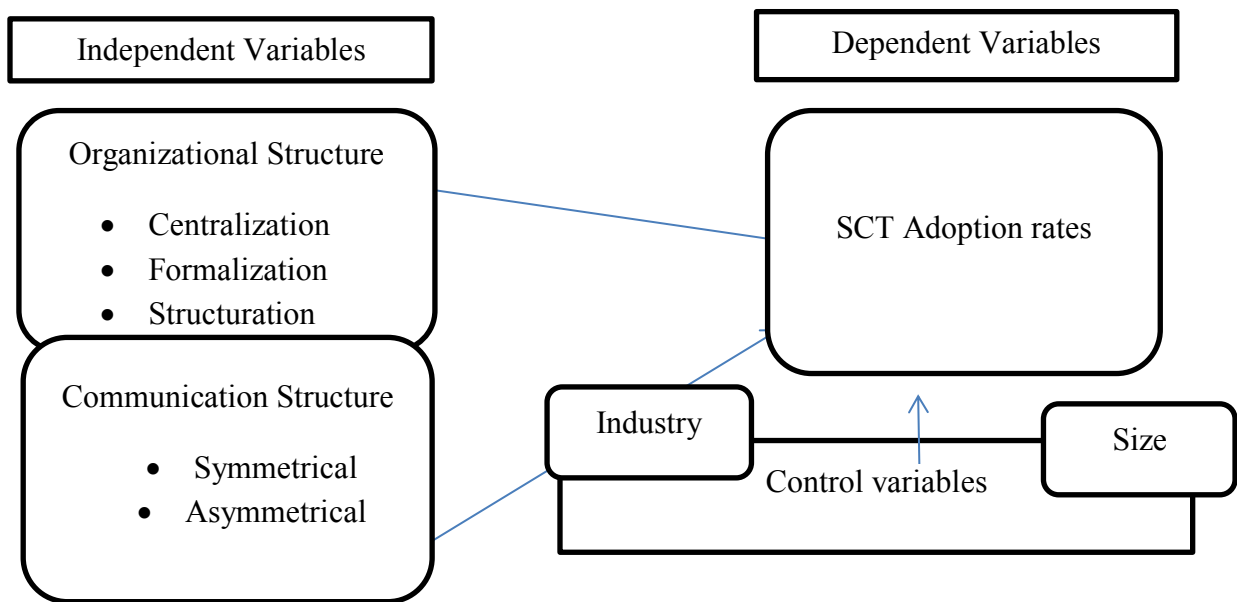
Researcher's Assumptions and Biases

Several assumptions were made in the design of the research methodology. It was assumed that even if individual factors of SCT adoption in the organization impact the adoption process, they are less significant influences than organizational factors. Similarly, it was assumed that the perception of organizational and communication structure is homogenous among members of the same organization. It was expected that the participants would be willing to answer the survey questions accurately and honestly. This assumption was made based on the anonymity of the study. The researcher assumed that despite biases of people who actively manage the process of social software adoption in organizations, they would be able to provide valuable insight into the adoption process during the ethnographic study.

Significance of the Study

People resist adoption of new technology due to different reasons. Some of these reasons have been discovered and examined in previous studies: individual attitudes toward technology, its perceived usefulness, characteristics of technology, and its affordance. This study contributes to the innovation diffusion and technology adoption research by investigating the impact of factors that have not been considered as determinants during earlier research. The author also traced other factors that may influence the SCT adoption rates using ethnographic research and content analysis.

Managers that introduce SCT into organizations should understand the process of technology adoption and the role of all possible factors when making large investments in SCT. Without adequate understanding of the factors influencing end-user's acceptance of technology, achieving the benefits and payoffs of the technology is unlikely. The study also has a marketing implication for the companies that design and sell social software. It can potentially benefit their

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efforts in targeting and assisting organizations based on the analysis of factors that have been proven to influence adoption and engagement rates.

Without an understanding of all adoption factors organizational decision makers may not reap significant benefits from social software implementation and adoption (Bughin, Byers, & Chui, 2011; McAfee, 2010), or an organization may experience unintended negative consequences of social media use (Parameswaran & Whinston, 2007). Serious adverse effects include uncoordinated negative value creation, loss of employee privacy and productivity, and miscommunications (Burrus, 2010; Chui, Miller, & Roberts, 2009).

Delimitations and Limitations

Delimitations of the quantitative part of the study are associated with the nature of the research questions and hypotheses. Since the focus was only on four variables or SCT adoption factors, organizational and communication structure, the size of the company, and affiliation with industry many other organizational factors are omitted during the quantitative data collection and analysis. The qualitative section of the study had fewer limitations since the research question was much broader and embraced a variety of adoption factors.

The emphasis in research was on the study of the impact various factors on the rate of adoption of social communication technologies by an organization. Such approach places certain delimitations on the types of technologies and organizations to be studied. The choice of technology is limited only to social software or SCT that used within organizations and that existed during the period of study as a part of social intranet.

Another delimitation of this study is the choice of organizations. First, it was decided to select only organizations that employ commercial social intranet platforms which limit the pool

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of researched organizations. The data about internal or private organizational social networking sites are not publicly available, so the researcher was limited by accessibility of this data and the willingness of companies to participate in research of this nature.

The next limitation lied in the quantitative research approach utilized in the study. A quantitative research approach usually misses all factors that affect the process of technology adoption in organizations in comparison to the qualitative approach. Qualitative part of the study provided a comprehensive picture of the adoption process but missed important objective measurements.

The last limitation is the choice of the organizational and communication structural dimensions to frame the quantitative element of the study. Although the structural dimensions proposed by Grunig et al. (2002) are based on sound studies and have been validated, other authors have suggested alternative dimensions of organizational structure. Replicating this study using some of the alternative dimensions could create a complete picture of the effect that these dimensions have on adoption rates.

Definition of Terms

This section presents the definitions of key terms used in this study.

Adoption. Use of technology by members of the organization as part of operating processes.

Adoption rate or time. The time elapsed from SCT implementation to the moment when the extent of adoption reached, the relative speed by which technology is adopted.

Bureaucratic organizational structure. A framework marked by hierarchy of authority and centralized decision making.

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Centralization. Centralization refers to the extent to which authority and decision making lie at the top of the hierarchy. A centralized structure is characterized by low participation in decision making and high hierarchy of authority.

Communication structure. Organizational communication structure has been defined by many scholars. Johnson (1993) refers to it as "the relatively stable configuration of communication relationships between entities within an organizational context" (p.11).

Compatibility. This is the degree to which the new product fits in the system of values, habits, past experiences and needs of potential adopters

Complexity. Complexity is the degree of occupational and tasks specialization in the organization

Diffusion of innovations. Diffusion of innovations refers to the process whereby a new product, service, idea or technology spreads through a population.

Engagement rate or Extent of adoption. The highest fraction (percentage of the population) that used social features of the intranet during the adoption process, the depth and breadth of adoption

Enterprise 2.0. Andrew McAfee (2006) defines the term as the "use of social software platforms within companies, or between companies and their partners or customers" (para.1)

Formalization is the degree of emphasis placed on rules and procedures

Formal and informal structure. With formal structure procedures and communications in an organization are prescribed by written rules, and in informal communication interactions are less regulated and structured.

Horizontal communication. Messages flow across functional organizational areas, permitting people to communicate directly.

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Social communication technologies or social software. The author uses the terms *social media or social software or social communication technologies (SCT)* interchangeably throughout this dissertation. SCT are technologies that support "one to many" communication, facilitate social interaction and information sharing, make possible collaboration and enable individual production of content.

Social Intranet. Social intranet could be defined as the intranet with social tools that are utilized by the majority of employees

Symmetrical and asymmetrical communication structure. Grunig (1992; 2002) used two important dimensions to explore organizational structure. Symmetrical communication in organizations is two-way and horizontal, and asymmetrical is, in contrast, one-way, top-down and designs to control the behavior of employees.

Virtual community of practice. According to Wenger et al. (2002), communities of practice are ''groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis''. An organizational CoP could be a self-organizing and open activity system (Wasko & Faraj, 2005), but also could be established by the management of an organization that hosts such community. (VCoP) is a new type of web-based collaboration and communication that utilize network and communication technologies which allow people to stay connected and communicate, even though they are separated by time zone and geographic locations.

Virtual organization: A business entity that uses integrated information and communication technology to link spatially and temporally dispersed employees who work from a location other than the traditional brick-and-mortar establishment (Bleecker, 1994; Werther, 1999).

General Overview of the Research Design

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The current study employs a concurrent mixed methods approach to examining factors impacting social software adoption in organizations. The researcher simultaneously viewed SCT adoption process through the eyes of the social software implementers – while empirically investigating the relationship between adoption rates and some organizational factors. In the type of mixed methods, research design conducted in this study, findings from the qualitative analysis were collected and analyzed separately from the quantitative analysis. However, the final interpretation of findings, meta-inferences, were based upon both the qualitative and quantitative results (Creswell & Plano Clark, 2007). The research design for the present study is described in details in Chapter Three.

A concurrent mixed methods design involve two independent strands, one quantitative (QUAN) and the other qualitative (QUAL), each with its own set of questions, independent samples, and method-specific sampling, data collection, and analysis techniques. Sampling design was not identical or nested but parallel (Onwuegbuzie & Collins 2007); time orientation was not sequential but concurrent and both methodological approaches were equally important. This type of mixed methods design limited the amount of meta-inferences and opportunities for data sets merging and triangulation, however, it allowed a researcher to avoid a faulty comparison of findings, decreased error in results of each strand. Since the final empirical results of both strands were conflicting, the study rendered a more holistic picture without complete corroboration and triangulation between two sets of findings.

To measure independent variables, organizational and internal communication structures, the International Association of Business Communicators (IABC) study questionnaire (Grunig et al., 2002) was used with some modification. The questionnaire was validated by previous studies on organizational and communication structures (Grunig et al., 2002; Kim, 2012). In addition,

the author collected publicly available documents that revealed an organizational structure (organizational charts). To measure the adoption rate, the intranet and social software usage data, the monitoring tool that usually is an intergraded part of social software or a platform was utilized.

To gather qualitative data the author employed digital ethnography methods and techniques: observations, a survey, a series of interviews with community facilitators and managers, social media consultants and other people who play a crucial role in the adoption process; artifacts such as conference presentations, posts on online forums, social networking sites, and other documents. Using a typical approach to digital ethnographic fieldwork, the author became a member of online and face-to-face organizations that cater to the needs of community and intranet managers.

The quantitative part of the study was done in organizations that have implemented commercial social intranet platforms or social software. During the first phase, this study focused on organizations, so the target population consists of companies and organizations that use social media for internal communication. During the second phase, the employees of organizations that implemented SCT were the target population that needs to be sampled. Given that the study targeted two populations, and there were two samples, the methods and sampling approaches vary. In order to sample the first population, organizations, a simple random sampling was applied, and employees in each organization were surveyed using a non-probability sampling method.

The qualitative part of the study was done in online and face-to-face communities of social software implementers. The researcher has applied two types of sampling: a random stratified sampling for interviews and a snowball and convenience sampling to locate research

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subjects for a survey. The accessibility of online communities for social software implementers was the primary factor in the decision for inclusion into the study sample.

Summary of Chapter One

In this chapter the author states the problem, clarifies definitions, research questions, and hypotheses, offers a theoretical framework for the study, overviews research design and shares limitation and limitations of research. While the reader is presented with a brief overview of the study, in the consequent chapters research is discussed in greater details.

Organization of the Dissertation

This study is organized into five chapters with appendices. Chapter One begins with an introduction followed by the problem and purpose statements. Next, the terms are defined and discussed to outline the phenomena being studied. Research design along with the limitations and biases of the study is outlined.

Chapter Two presents the literature review, the research model, and states the hypotheses being researched. First, the background and literature review are discussed. Then, existing technology adoption models are evaluated to show how these models can be used within the context of the study. Next, the constructs of organizational and communication structures are introduced to show how it fits within the SCT adoption model. Then a conceptual model and hypotheses are developed and presented.

Chapter Three describes the research methodology. This research methodology covers research methods and the process of data collection. Following the study design cutline, there is a description of each stage performed in the study. Then, the sampling and data validating techniques are described for testing the hypotheses.

Chapter Four presents the analysis of the data collected along with the research findings.

Chapter Five includes the conclusion, discussion, and research summary. Empirical findings are summarized along with limitations and contributions of the study followed by future research suggestions.

CHAPTER TWO

Summary of Literature Review

The purpose of this literature review is to analyze theoretical and empirical research that supports current study of adoption of social communication technology (SCT) for internal communication in formal and informal organizations. The literature relevant to this study spans across several disciplines and fields of study. Since the author explores a techno-social system in organizations, relevant theories and empirical studies from computer and information science, communication studies, sociology and social psychology, management science and organizational studies were investigated. Chapter Two is structured into three parts. Part one analyzes the current situation with adopting and using SCT in organizations based on the research studies and surveys. Part two considers a theoretical framework of adoption communication technology in organizations and review empirical studies. Part three provides an overview of factors that affect implementation of SCT in formal and informal organizations, identifies the gap, and proposes research imperatives. The author has located the most significant research studies that deal with using social software in organizations and performed a meta-analysis of theories and empirical studies. The literature review is not exhaustive but provides sufficient analysis of studies in order to examine the body of knowledge, find potential areas for further research, and create a framework for an empirical study of adoption of SCT in organizations.

Adoption of Social Communication Technology in Organizations

In the literature, one can find several terms that describe the social processes involved in the adoption of technology by organizations. One of the most common words is *diffusion* or a process in which something (innovations or technology or a new product) spreads out in any social system. Others words are *implementation, adoption,* and *integration*. The term *organizational implementation* is used to denote the process of introducing the technology in an organizational setting (Walsham, 1993).

Rogers (1983) suggests the following stages of diffusion of innovations in organizations that could be applied to the adoption of social communication technologies: agenda-setting; matching; redefining/restructuring; clarifying; and routinizing. Damanpour (1991) summarizes these steps in two phases: initiation and implementation. According to him, during the first period, initiation, organizations' managers assess the needs, collect and analyze data, allocate resources and provide training/testing, and finally make the decision to implement technology. In the second phase, implementation, an organization starts to use the technology, adapting it to organizational procedures and processes. Alternatively, Premkumar and Roberts (1999) considered five stages in the adoption process: awareness, persuasion; decision; implementation; and confirmation. Cooper and Zmud (1990) argued that the IT adoption process could divided in six stages. The first stage is initiation (active or passive search for opportunities). It is followed by adoption (negotiations for backing IT implementation); adaptation (applying the IT and revising organizational procedures); acceptance (company members are encouraged to use the IT); routinization (the use of the IT becomes standard); and infusion (efficiency is increased as a consequence of the IT use). If one considers the adoption of technology being a process of change, one may also apply Kurt Lewin's model of change (Lewin & Lewin, 1948, Lewin &

Gold, 1999) described by him as a three-stage process: unfreezing, change, and freezing. During the unfreezing phase, organizational members learn about technology, initially resisting or accepting it based on various factors; then come around using it, and finally adopted it in freezing period. Even if the abovementioned authors do not agree on names or number of adoption stages, everybody sees it as a process that goes through identifiable phases

Practitioners and consultants like Blanchard (2011) observe the following phases of social media adoption:

- Test adoption (setting SM accounts, posting using external SM) "standalone function with virtually no integration within the organization"
- Focused adoption (using for marketing, public relations, maybe customer support)
- Operational adoption (other departments begin utilizing SM technologies)
- Operational integration (SM are incorporated into the entire organization across production department)

In recent years, more and more researchers have come to the realization that the adoption of communication and information technology is an interactive process. Users are not passive recipients of technological innovations but are actively changing the way technology is adapted and even changing technology itself. There is a constant interaction between users, technologies and organization which cannot be entirely controlled or even monitored by IT or organizational managers (Barki, Pare, & Sicotte. 2008; DeSanctis & Poole 1994; Orlikowski 1996). Leonard – Barton (1987) refers to the implementation of technology in organizations as mutual adaptation, where the social system adapts to technology and technology is being modified by a social system. In the case of social communication technology adoption, more studies are needed to

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confirm the unique flow of SM integration. Let us take a look at two players in this interactive, sometimes cyclical or dialectical process, and start with technology. In this case, it is a set of mobile and web-based communication technologies, called social media or social communication technology.

Social Communication Technology

The author uses the terms *social media (SM) or social communication technologies (SCT) or social software* interchangeably throughout this dissertation. In the literature, social media and Web 2.0 technologies are used intermittently to describe, analyze or refer to the same tools (e.g., Chong & Xie, 2011). Other terms that describe similar technologies are social software (Raeth, Smolnik, Urbach & Zimmer, 2009), social computing (Carroll, 2010) and new media (Brengarth, 2011). Such variety of definitions and terms in reference to similar technological tools creates a problem for practitioners who implement these technologies and for researchers who study their adoption. Not only terms that describe technologies themselves are in the state of flux, but also new words and expressions associated with SCT appear and became popular. In 2006, McAfee (2006) coined the term Enterprise 2.0 to describe Web 2.0. technologies that are used in businesses. In 2009, a new name appeared, "social intranet", which refers to the intranet that includes SCT.

The term social communication technologies (SCT) or social media (SM) has been defined in different ways. Bryer and Zavatarro (2011) stated, "*Social media* are technologies that facilitate social interaction, make possible collaboration, and enable deliberation across stakeholders "(p.327). Kaplan and Haenlein in their seminal article (2010) describe SM as "a group of Internet-based applications that build on the ideological and technological foundations of Web.2, and that allow the creation and exchange of User Generated Content." This definition

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includes two concepts that require further explanation: Web 2.0 and User Generated Content (UGC). Web 2.0 is a term first used by Tim O'Reilly of the O'Reilly Media Group in 2004 to explain changes in the nature of web sites and Web-based services. O' Reilly wrote in his blog post (2008), "I define Web 2.0 as the design of systems that harness network effects to get better the more people use them, or more colloquially, as 'harnessing collective intelligence.' This includes explicit network-enabled collaboration, to be sure, but it should encompass every way that people connected to a network create synergistic effects". Kaplan and Haenlein, Bryer and Zavatarro's definition of social media and O'Reilly's definition of Web 2.0 media seems identical; however, it is not. All Web 2.0. technologies could be categorized as social communication technologies or social media, because some of them are not "communication technologies" but web-based technologies, services, applications and web sites with Web 2.0 architecture.

The author of this dissertation does not intend to clarify or re-define the term but only to highlight SCT features which have implications for the technology adoption process. If someone reads through numerous articles and books written by evangelists of new web-based technologies, new media, and networking tools, it is noticeable that many writers share the assumption that certain social roles, values and affordances are embedded in the design of SCT (Jarvis, 2011; Shirky, 2008). Some authors go even further and claim that the Internet is a part of nature, has logic, and not just a socio-technical but a bio-technical system (Kelly, 1995). Kaplan & Heinlein wrote about "ideological foundation" (2010) of social media and Web 2.0. Lister, Dovey, Giddings, Grant, and Kelly (2009) associate these new media with deep societal structural changes. The information architectures and technological affordances cannot solely determine the nature of the adoption process, nor can all roles and functionalities imagined by

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designers materialize. However, technology exerts an influence on the socio-technical system of adoption (Winner, 1985). A particular adoption of technology's features may be the catalyst for change in the structure and content of the network or organizations (Leonardi, 2007; Nan 2011). Christensen (2000) in his book "Innovator's Dilemma" divides all technologies on sustaining and disruptive types. If sustaining technologies "improve performance of established products" (p. xviii), disruptive technologies change or disrupt established products, organizations and processes. Further research is needed to establish if social software is sustaining or disrupting technology.

Most of the studies of affordances involve a specific type of social media and not all of them are done in the organizational context (Aakhus et al, 2011; Leonardi & Barley, 2008; Van Osch & Mendelson, 2011). Just a few articles are written about private SNS or social intranets. Social software and intranet platforms usually are developed based on organizational or business needs and should display more pronounced affordances. Treem and Leonardi (2012) explore affordances of SCT in organizations. They establish that four affordances are consequential and unique for SCT: *visibility, persistence, editability, and association*. Visibility of behavior and tacit knowledge separate SCT from other communication technologies (e-mail or instant messaging) that consequently change group dynamics and knowledge management (boyd, 2010; Grudin, 2006). *Persistence or recordability* (Hancock, Toma, & Ellison, 2007) allows messages created using SCT to "persist" or be recorded, which provides sustainability and opportunity to deposit or archive the knowledge. *Editability,* according to Treem and Leonardi (2012), refers to the fact that the message could be edited or "crafted and re-crafted". Dennis, Fuller, and Valacich (2008) describe a similar affordance, *rehearsability*. The last affordance is "*association*". Treem and Leonardi (2012) argue that there are two types of association: the associations or ties-

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creations between people and the association between a message and a person. boyd & Ellison (2007) emphasize building relations as one of the defining characteristics of SCT.

Researchers who study SCT note that these tools enable very quick diffusion of information (Yates, & Paquette, 2011), strengthen widespread information flows (Sutton, Palen, &. Shklovski, 2008) and support collaboration as one of the major benefits of an intranet (Munkvold, 2008; McAfee, 2009; Wesley, 2011; Kirkman, 2011 & Cheung, 2013) and dialog (Grunig & Hunt, 1984, Kent & Taylor, 1998, Men & Tsai, 2012). Antony Mayfield (2008) considers social media as the new online media which has the following characteristics: *participation*, *openness*, *communication*, *dialog*, *community*, *connectivity*.

Sociability is concerned with the informal interaction between participants and it is the central focus in social presence theory (Short, Williams & Christie, 1976; Chidambaram & Jones, 1993). *Social presence* is the extent to which an individual perceives others during communication. *Social presence* is an important factor in communication with different media providing different levels of social presence. Another important trait is *media richness*. The richer the medium, the more information cues are present; the better is the whole communication experience. Some SCT is leaner than others. Media Richness Theory (Daft & Lengel, 1986) hypothesizes the existence of the relationship between this medium trait (richness) and a working task.

The second player in the technology adoption process is a social system, or in this case, an organization. The author of the review examined studies, including surveys of use of SCT in formal organizations and informal organizations.

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Formal Organizations and Social Communication Technologies

Despite extensive application in a corporate setting, only a handful of scholarly studies has been conducted on the utilization of SCT by businesses (Culnan, McHugh & Zubillaga, 2010; Men & Tsai, 2012;2013; Jeffries, 2012, Wamba & Carter, 2013) and in organizations (DiMicco et al, 2008; 2009; Treem & Leonardi, 2012) Organizations just have begun exploring the value of these technologies "behind their firewall", for employees' and organizational needs. Some studies focus on online collaboration (Munkvold, 2009; Dumova, T. & Fiordo, R., 2010; Nugent, 2011) or knowledge exchange (Schneckenberg, 2009; Ford & Mason, 2012; Seebach, 2012; Vuori, 2012). The lack of empirical insight into the social media use by corporate entities, and any substantial evidence of value, makes it difficult for managers to employ internal communication strategy which includes SCT.

Other types of organizations which benefit from adapting social communication are internal informal organizations. They also have been called "parallel structures" (Cummings & Worley, 2009, p.354) or "organizational communities of practice" (Lave & Wenger, 1990) or "learning communities".

Informal Organizations and Social Communication Technologies

Since Brown & Duguid (1991) published their ethnographic study about a group of Xerox employees who made up an informal community to share their knowledge and learn from each other. After Lave and Wenger's (1990, 1991) notion of "community of practice" (CoP) appeared in the literature, the role of CoPs in organizations was widely discussed in the field. By the mid-1990s, several consultancies had sprung up with the offer to assist in building a CoP, a sure sign that a management innovation had hit the big time. In 2000, Etienne Wenger and his colleagues published a Harvard Business Review article proclaiming communities of practice as

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"the next organizational frontier." According to Wenger et al. (2002), communities of practice are ''groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis". An organizational CoP could be a self-organizing or an open activity system (Wasko & Faraj, 2005), but also could be established by the management of an organization that hosts such a community.

According to Zhang & Watts (2002), virtual CoPs differ from conventional CoPs in several important ways: reliance on technology, visibility and opportunity to record and archive communications, larger membership, and other characteristics. The body of literature dedicated to virtual communities of practice is significantly modest in comparison to the collection of theoretical and empirical studies related to traditional face-to-face communities of practice. Still, there were attempts to create a theoretical framework for a virtual CoP (VCoP). Gunawardena et al. (2009) applied all three elements of a CoP proposed by Lave & Wenger's (domain, practice, and community) to social networking environments and included technology in the domain part of a VCoP model.

No matter what type of VCoP (intra or inter-organizational, closed or open), communication is essential; thus, it is highly likely that technology that supports communication is involved. Many researchers agree that social media benefits virtual communities of practice. Practitioners or managers of VCoP, however, still work in the dark, since researchers who study virtual communities just recently became increasingly interested in understanding the characteristics of SCT and its effects on VCoPs (Vaughan, 2004; Lee, Vogel, & Limayem, 2007; Wenger, 2009). An author of the literature review paid close attention to studies about conditions for building and sustaining VCoP (Stuckey, 2007); management of VCoP (Cothrel & Williams, 1999), and barriers in their development (Ardichvili, Page, & Wentling, 2003).

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Some organizations focus on technical infrastructure and neglect social and organizational elements (Gibson & Meacheam, 2009), and others fail to develop portals and communication technology to support these communities (Hildreth & Kimble, 2004). Even if many researchers agree that "the most innate location to maximize the benefits of social media is within existing CoP (Annabi et al, 2012), there is a lack of research studies that examine factors that influence the process of adoption of SCT in organizational VCoP.

Theories on Adoption of Communication Technologies

Literature review has established that there is no one all-encompassing theory that explains the process of communication technology selection and adoption by members of an organization. Since scholars consider the relationships between technology and society from various perspectives, the process of technology adoption is presented differently in the literature. Followers of technological determinism emphasize the leading role of technology and its influence on society and an individual. Social constructivists consider social factors that influence technology during adoption. Hughes (1969) with his "technological momentum" advanced the idea that social factors are prominent in the beginning of the adoption process. He also proposed that later, when technology diffused in the society, its force became more prevalent.

In addition to the variety of philosophical underpinning and perspectives, scholars who work in the various fields offer different viewpoints on technology adoption. Disciplinary affiliation is not as crucial as philosophical outlook. Some of the theories are disciplinary, and some are interdisciplinary, integrating perspectives, data and concepts across many disciplines.

There are three disciplines where the adoption of technology in organizations is studied with utmost intensity.

In management science and organizational studies, focus is on research on organizational innovation, which includes a particular aspect of innovation – technology. Wolfe (1994) stated that during the five years preceding his study, approximately 350 dissertations and 1300 journal articles were written on the topic. Among the myriad of theoretical models offered by researchers who study adoption of innovations in organizational settings, the author selected to evaluate theories that included multiple adoption factors or were applied on the organization-level. Among them are the "technology-organization-environment" (TOE) framework (Tornatzky, Fleischer & Chakrabarti, 1990); the contingency theory (Thompson, 1967; Woodward, 1965); the media selection model (Daft & Lengel, 1984), and the dual-core theory of innovations (Daft, 1978). Other theories that address organizational variables are also briefly reviewed.

Literature in the discipline of information systems (IS) focusing on user acceptance of technology is often described as one of the most mature research areas (e.g., Hu et al. 1999). The theories that underwent significant empirical testing are the Technology Acceptance Model (TAM) (Davis 1986, Davis 1989, Davis et al. 1989; Zhou, 2008), and the Unified Theory of Acceptance and Use of technology (UTAUT) (Venkatesh et al. 2003; Curtis et al., 2010). As Moore and Benbasat (1991) point out, there are many parallels between TAM/TRA and diffusion theory. For example, TAM's *perceived usefulness* and *perceived ease of use* are essentially the same as diffusion theory's *relative advantage* and *complexity*.

In sociology and social psychology, such theories as uses and gratifications theory (UG) (Rubin, 1985) and theory of planned behavior (TPB) (Ajzen, 1985; 1991) have been developed and tested. The study of adoption of communication technology is crucial for media management research, computer mediated communication, and communication studies in general. Diffusion of innovations (DOI) by Rogers (1962; 1983; 1995; 2003) is the fundamental work, not only in the field of communication studies, but also in other disciplines.

Academic research on adoption of a particular type of media, social communication technologies, is at a nascent stage. It primarily has been focused at the individual level of adoption. Among theories and frameworks that have been applied are: the Technology Acceptance Model (TAM) (Davis 1986, Davis 1989, Davis et al. 1989; Zhou, 2008), the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003; Curtis et al., 2010), the Theory of Planned Behavior (TPB) (Ajzen 1985, 1991), Uses and Gratifications Theory (UG); and other theories of individual acceptance of technology (Compeau & Higgins 1995). Individual-level approaches explain individual preferences rather than the organizational factors, and even the author was able to find empirical studies that appropriate these theories to study social media adoption in organizations; these theories did not explain why social media are adopted by individuals for personal use but not for internal communication in organizations.

More promising for our study are organizational-level theories of technology adoption and theories that encompass both types of factors, organizational and individual. First, at a general level, contingency theory and diffusion of innovation present a broad framework for explaining why organizations and informal groups adopt technology. Another group of authors has focused on implementation success at the organizational level (Leonard-Barton & Deschamps, 1988), media selection process (Daft & Lengel, 1986; Goodhue & Thompson 1995;

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Dennis & Valacich, 1999; Carlson & Zmud, 1999), process of adoption of innovations (Rogers 1995; Tornatzky, Fleischer & Chakrabarti, 1990; Daft, 1978), strategic management (Hackler and Saxton, 2007), and social and institutional pressures (Zorn et al., 2011).

All these theories and their empirical testing could be useful for explicating of social software adoption in organizations. On the other hand, the process of adoption of SCT by organizations could be different from other technologies in ways that make above mentioned theoretical approaches less relevant.

Diffusion of Innovations Theory (DOI)

The adoption of new interactive media can be studied in the context of the theory of diffusion of innovations (Rogers, 1962). Thousands of studies of various types of technologies have been conducted using this theoretical framework during the last few decades. However, studies that apply this theory to diffusion of SCT in organizations are not as numerous as could be expected. Classical DOI explains how an innovation or new idea propagates in a social system over time. The foci of the theory are on the knowledge, attitude and decision making processes that affect the adoption of an innovation. Related literature suggests that a person's probability of adoption is influenced by perceived characteristics of a given technology, perceived needs, and perceived popularity (Zhu & He, 2002). According to Rogers (1995); people also consider new products against the following criteria:

- Relative advantage**.** This is the degree to which the product performs better than the product it replaces. In the case of SCT, if microblogging has advantage over e-mail, a user may prefer to post short text messages to the board.

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- Compatibility. This is the degree to which the new product fits in the system of values, habits, past experiences and needs of potential adopters. This criterion is actually a collection of various factors that deserve a separate treatment. Compatibility should not be confused with attitudes or habits formed by prior experiences. If a user has previous experience in using open social networking sites, this experience could affect adversely user's perception of private or corporate intranet. The "compatibility" is about values and culture. How comfortable a user to share information with people outside of his work group or if an organizational culture support information sharing.

- Complexity. Products and ideas that are easily understood are far more likely to be adopted. Simple interface, easy navigation and user-friendly design of popular social networking sites positively affect the rate of adoption.

- Trialability. This is the degree to which the product can be tried out before buying. If a product is either so cheap that it can be bought, tried and thrown away if necessary, or if it is expensive but can be thoroughly tested before committing to buying, it is more likely to sell. Many social intranet platforms utilize familiar features of open social networking sites and vendors usually allow having a pilot test.

- Observability. The more the product can be seen by others, the more likely it is to be adopted. It is not just about marketing new SCT but making it easy accessible on the portal and available for all members of the organization.

The generalizations of classical diffusion were developed mainly by looking at the adoption of innovations by individuals making choices about whether to adopt certain products/ innovations. Diffusion of social media in society could be explained by applying this original

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theory. However, to apply classical DOI to any SCT adoption process in an organization, a researcher should take a look at the extended DOI. Leonard-Barton and Deschamps (1988) have studied adoption of innovations by individuals who are subjects to strong *managerial influences.* Kwon and Zmud (1987); Robertson and Gatignon, (1986); and Rogers, (1995) consider adoption of innovations in organizations or adoption by an organization as a whole.

Rogers & Allbritton (1995) apply the theory of diffusion of innovations to organizations by adding such variables as individual and leaders' characteristics (attitude toward change), internal organizational structural characteristics, and external characteristics of the organization (openness). Internal characteristics of organizational structure include (Rogers, 1995):

- Centralization is the degree to which power and control in the system are concentrated in the hands of a relatively few individuals.
- Complexity is the degree to which an organization's members possess a relatively high level of knowledge and expertise.
- Formalization is the degree to which an organization emphasizes its members' following rules and procedures.
- Interconnectedness is the degree to which the units in a social system are linked by interpersonal networks.
- Organizational slack is the degree to which uncommitted resources are available to an organization.
- Size is the number of employees of the organization.

Kwon and Zmud (1987) and Robertson and Gatignon (1986) have developed more comprehensive frameworks for studying organizational adoption and diffusion than Rogers in his

first editions of the "Diffusion of Innovations" (1962; 1983). The Kwon and Zmud (1987) framework defines five *contextual factors* (user community characteristics, organizational characteristics, technology characteristics, task characteristics, and environmental factors). Each of which may impact any of six *stages* of IT implementation (initiation, adoption, adaptation, acceptance, routinization, and infusion). Robertson and Gatignon (1986) propose that a variety of *competitive effects* in the technology consumer's industry (competitive intensity, demand uncertainty, professionalism, cosmopolitanism) and within the technology supplier's industry (level of competitiveness, reputation, R&D allocation, technology standardization) impact the rate and level of diffusion high technology innovations. Kwon and Zmud (1987) emphasize differences in an adopter's innovativeness, while Robertson and Gatignon (1986) are concerned with variables affecting the macro diffusion process.

Rogers wrote in 1986, "Further research on the diffusion of new communication technologies will serve to broaden the scope of diffusion theory" (p.122). Few researchers (Choi, Kim & Lee, 2010; Coursaris, Yun & Sung, 2010) followed his advice to study how diffusion of innovation works in organizations that are trying to introduce SCT for internal communication.

Kelleher and Sweetser (2012) conducted interviews at two online universities. The results show that participants were drawn to adopt social media mainly by relative advantage, compatibility, and trialability. Inductive themes that emerged from the interviews included an emphasis on publics, information sharing, cost, and convenience. A believer–nonbeliever distinction among adopters was introduced. Believers were driven by the same characteristics of social media that public relations researchers have found to be essential to the practice of public relations itself: 2-way communication, interactivity, dialog, and engagement.

Nah and Saxton (2012) included Roger's DOI model in their theoretical framework to examine the determinants of three key facets of social media utilization in non-profit organizations: (1) adoption, (2) frequency of use, and (3) dialogue. They found that organizational strategies, capacities, governance features and external pressures play a part in social media adoption and its outcomes.

Technology-Organization–Environment (TOE)

This framework was developed by Tornatzky, Fleischer and Chakrabarti in 1990. It identifies three aspects of an enterprise that influence the technology adoption process. Those three aspects are: 1) technology availability and characteristics); 2) organization, including formal and informal structures, communication processes, size and resources, and 3) environmental context (industry, government regulations, and competitors).

Tornatzky, Fleischner and Chakrabarti (1990) did not include individual factors nor all organizational factors (for example culture, leadership or governance), but they were among the firsts to emphasize the role of characteristics of technology and organizational factors in the adoption of technology and innovations in organizations. The TOE framework has consistent empirical support (Chau & Tam, 1997; Thong, 1999; Zhu, Kraemer, & Xu, 2003). Yoon (2009) and Saldana and Krishnan (2012) are among the few who draw on the Technological-Organizational-Environmental theoretical framework when they study SCT. The results suggest that open architectures, organizational size, and industry knowledge intensity play pivotal roles in Web 2.0 technology adoption.

The Dual-Core Theory of Innovations (DCTI)

The dual-core theory (Daft, 1978) proposes that the appropriate organizational structure for innovation might be either mechanistic or organic, depending upon the type of innovation to be adopted. According to Daft (1978), there are two sets of innovations: administrative and technical. *Technical innovations* pertain to products, services and production process technologies, the primary work activity of the organization, and they can be either product or process innovations (Daft, 1978; Damanpour & Evan, 1984; Knight, 1967). *Administrative innovations* involve organizational structure and administrative processes; that is, they are indirectly related to the primary work activity of the organization and more directly relate to its management (Daft, 1978; Damanpour & Evan, 1984; Kimberly & Evanisko, 1981). It is not clear if innovations in communication, knowledge and information management should be placed under administrative innovations or technical innovations since they are not "primary work activities".

Daft (1978) suggests that technical innovations follow a bottom-up process, while administrative innovations typically follow a top-down process. The dual-core theory also suggests the structures that facilitate innovation in each core are different. A mechanistic structure is needed when an organization must adapt to change in goals, policies, strategies, structure, control systems and personnel. Thus, low employee professionalism, high centralization in decision making, and high formalization of behavior facilitate the top-down process of administrative innovations. On the other hand, organic structure is needed when changes in organizational products, services and technology are necessary. Thus, high professionalism, low centralization, and low formalization facilitate the bottom-up process of technical innovation. One important contribution of Daft's theory (1978) to the discourse of technology adoption in organizations was to show that the type of innovations and organizational

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structure are interdependent. Following his logic, the author proposes a similar relationship exist between organizational and communication structure and social communication technology.

Contingency Theory

Classic contingency theory (Woodward, 1965; Thompson, 1967) explains the relationship between organizational structure and other contingencies (including technology). The main premise in structural contingency theory is that there is no one best organizational structure; rather, the appropriate organizational structure depends on the contingencies facing the organization (Blau, 1970; Galbraith, 1973)

Schoonhoven (1981) regarded contingency not as theory but rather as "a metatheory, suggesting ways in which a phenomenon ought to be conceptualized or an approach to the phenomenon ought to be explained" (p. 350). Contingency theory or the idea behind the theory helped to generate studies on the relationship between technology and organization (Blau, Falbe, McKinley, & Tracy, 1976; Carter, 1984; Kelley, 1990; Galbraith, 1977; Perrow, 1967; Pfeffer & Leblebici, 1977; Schoonhoven, 1981) and informed contemporary investigations into the impacts of information technology on organizations, for example, in research on media richness (Trevino, Lengel, & Daft, 1987; Trevino, Webster, & Stein, 2000).

Media Richness Theory

There are few theories that could guide the research or help develop scalable and replicable models of choosing communication tools for a group or an organization. Media Richness Theory (Daft & Lengel, 1986) describes the relationship between media characteristics (richness, leanness) and tasks. Media Synchronicity Theory (Dennis & Valacich, 1999) focuses not on tasks that need to be performed, but on the communication processes. Channel Expansion

Theory (Carlson & Zmud, 1999) extends the concept of media richness by proposing that the perception of the richness of the medium and the experience of the users with the medium have to be considered. The Channel Expansion Theory is one of the most promising places to start explaining why individuals choose to use one communication medium over another—that is media choice. However, Media Richness and also Media Synchronicity theories do not address the question of why an organization or group will select a particular technology for adoption.

Few empirical studies on the use of communication technologies in virtual organizations and groups have been conducted based on media richness theory (Koo, Jung & Lee, 2009; Koo, Wati, & Jung, 2011; Plotnick, Hiltz, & Ocker, 2012; Roberts, 2006; Schenkel, 2004). All these studies confirmed that the match between characteristics of the technology (media richness) and tasks and processes, including communication processes, do play a role when a virtual group or CoP adopts communication technology. However, it is not clear how much performed tasks and processes are important for adoption of SCT technology by a whole formal organizations.

Structural Theories of Innovations (STI)

Another group of theories that could underpin research of organizational factors influencing SCT adoption are structural theories of innovation. They emphasize organizational design characteristics that lead to innovation. One of the groups of theories, usually referred to as uni-dimensional theories of organizational innovation, traces the relationships between a structural variable and innovation. Structural variables examined in this set of studies can be grouped under two constructs—organizational complexity and bureaucratic control. In his overview of structural theories and meta-analysis of determinants of innovations, Damanpour (1991) uses variables which are commonly considered as fundamental elements of that construct:

(1) specialization, functional differentiation and professionalism for organizational complexity; and (2) formalization, centralization, and vertical differentiation for bureaucratic control.

The results of the review of theories that deal with adoption of technology in organizations are presented in the Table 1:

Table 1

Meta-analysis of Factors that Affect Adoption of Technology

Theories	Factors that impact adoption of technology
Rogers' Diffusion of innovation theory, Rogers, 1962; 1983; 1995; 2003	1st model: Perceived attributes of Technology: relative advantage; compatibility; complexity; trialability; observability Types of innovation-decision Communication channels Nature of the social system Extent of change agents efforts, actions 2nd model adds other factors: Individual and leaders' characteristics (attitude toward change) Internal organizational structural characteristics (centralization, complexity, formalization, interconnectedness, organizational slack, size) External characteristics of the organization (openness).
Kwon & Zmud, 1987	Contextual factors: user community, organizational, technology, tasks characteristics, and environmental factors
Robertson & Gatignon, 1986	competitive effects in consumer's technology (competitive intensity, demand uncertainty, professionalism, cosmopolitanism) technology supplier (level of competitiveness, reputation, R&D allocation, technology standardization)
Nah & Saxton, 2012	organizational strategies, capacities, governance features and external pressures
Technology-Organization– Environment, Tornatzky and Fleischer, 1990	technology availability and characteristics organization, including formal and informal structures, communication processes, size and resources environmental context (industry, government regulations, and competitors)

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The Dual-Core Theory of Innovation, Daft, 1978	organizational structure (professionalism, centralization, formalization)
Structural Theories of Innovation	specialization, functional differentiation and professionalism to embody organizational complexity; formalization, centralization and vertical differentiation to embody bureaucratic control.
Channel Expansion Theory, Carlson & Zmud, 1999	perception of the richness of the medium the experience of users
Contingency theory	organizational structure
Media Richness Theory, Daft & Lengel, 1986 Media Synchronicity Theory	media characteristics (richness, leanness) contingent to work related tasks contingent to processes
Technology Acceptance Model (TAM), Davis 1986, Davis 1989, Davis et al. 1989; Zhou, 2008	perceived usefulness (subjective norms, image, job relevance, output quality, result demonstrability) perceived ease of use external factors
Unified Theory of Acceptance and Use of technology (UTAUT), Venkatesh et al. 2003; Curtis et al., 2010	performance expectancy effort expectancy social influence facilitating conditions individual factors: age, gender, experience, voluntariness of use
Affordances Approach, Treem & Leonardi, 2012	Technology affordances: visibility, persistence, editability, and association

Theoretical Model and Framework

The challenge of developing a theoretical framework for the study of SCT adoption process is in the complex imbrications of technology and society. Another challenge is that all known theories are not mutually exclusive. They coexist and complement each other but are not yet grounded in a meta-theory. The most inclusive theories that could be used to study SCT adoption are the DOI (Rogers, 1962, 1983, 1995, 2003) and TOE (Tornatzky, Fleischer & Chakrabarti, 1990). Cestyakara and Surendro (2013) proposed a model of social media adoption based on DOI and TOE theories in which they were trying to combine TOE factors with Rogers' concept of five adopters' categories.

The author of the study does not propose a new model but suggest adding more factors to the set of factors considered by the authors of the DOI and TOE frameworks. The researcher investigated if other individual, organizational, environmental or technological factors should be added to the social software adoption model using ethnographic study of online communities of people who implement social software in organizations. In addition, such variables as organizational and communication structure, organizational size, and industry affiliation were analyzed to see if they fit into the SCT adoption model

Figure 2

Modification of Rogers' DOI Model
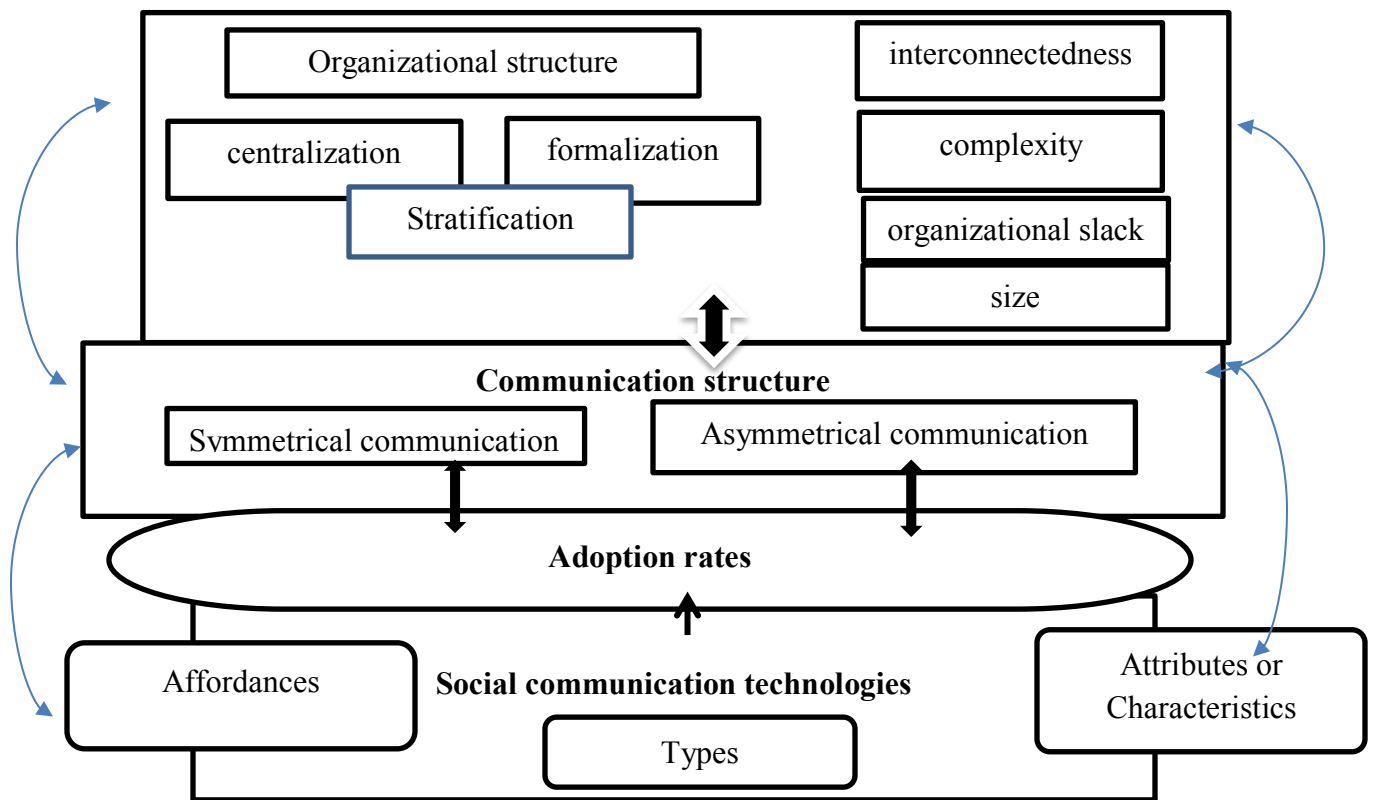
As this review demonstrates, there is an abundance of theories explaining the process of adoption of technology and innovations. With such significant theoretical underpinning, one would expect numerous empirical studies that test these theories in the context of social media

adoption in organizations. However, only nineteen studies were identified through searching

online collections of articles and books and summarized in the Table 2

Table 2

Summary of Empirical Studies

Theory	Analyzed Variables	SCT types	Data Collection	Data Analysis	Findings	Citations
DOI	• Five adopter's types • Geography • SM accounts • Size of served population • # of followers/likes • # posts (activity)	SNS Microblogging (**external**)	QUAN: Statistics of usage of local health departments SM accounts	(ANOVA) Bonferroni post hoc tests x^2 analysis t-test & partial correlation	Factors that influence adoption status: the size of organization/served population, governing organizations adopted SM, geography	Harris, Mueller & Snider, 2013
DOI	Information sharing, publics, cost, convenience, characteristics of SM, relative advantage, compatibility, and trialability	All SM	QUAL: Interviews in two online universities	Inductive themes		Kelleher & Sweetser (2012)
DOI/ TOE	Five adopter's types Social influence	All SM	QUAN: Survey of start-up companies in Indonesia	Structural equation modeling statistical analysis	Proposal	Cestyakara & Surendro, 2013
DOI/ UG	Perceived needs/motivation perceived innovativeness; perceived	**External** use of Twitter use by	QUAN: survey	Partial Least Squares (PLS); ANOVA	Predictors: individual needs for entertainment, relaxation,	Coursaris, Yun & Sung, 2010

	popularity, perceived characteristics	faculty/ students /staff of mid-size universi ty (66 respons es)			visibility; compatibility; mobile access	
DOI/ TOE	IV: organizational strategies, capacities (size, web site influence), governance and environment, CV: organizational age and industry type DV: presence, volume and dialogue	Twitter, Faceboo k of 100 largest nonprof its (**extern al use**)	QUAN: Data collected from publicly available statistical data and social network analysis	Regressio n analysis	Predictors: marketing strategy; web site influence; organizational strategies, capacities, governance features and external pressures	Nah and Saxton (2012)
TOE	DV: Propensity for adoption, intention to adopt, usage. IV:value of open standards; organizational size, knowledge intensity, CV: perceived usefulness, challenges; capital intensity, industry	Wiki, blogs, SNS – (**extern al use**)	QUAN: Survey	Descripti ve statistics	Positive correlation between value of open standards, org. size, knowledge intensity, and propensity for adoption	Saldanha & Krishnan (2012)
DCTI /prop osed new frame work	Control, autonomy,	blogs (18 compan ies) – **externa l use**	QUAL: Content analysis		Trends: top-down blogs, promotion-al content strategy and thought leadership	Lee, Hwang & Lee, 2006
Medi a Richn ess	Tasks characteristics: Analyzability - Urgency	IM, blog, e-mail, virtual	QUAN: survey of 280 employees	Multivari ate regressio n analysis	Characteristic s of tasks (analyzability, urgency,	Koo, Jung & Lee, 2009

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	- Complexity SCT use Social influence Social affinity	conference, e-learning platform			complex) influence the use of SCT and social aspects (social influence, social affinity) moderate the relationship between the tasks and the use of SCT.	
TAM	Ease of use, perceived usefulness, individual and organizational benefits	Microblogging (internal)	QUAL: Case study			Muller & Stocker, 2011
UTAUT/additional constructs	Intention to contribute; Intention to follow; Performance expectancy; Reputation; Expected relationship; Communication benefits; Signal-to-noise ratio. Privacy concern Collaborative norms	Internal microblogging (imagine)	QUAN: Online survey of 100 participants		Communication benefits, reputation, and signal-to-noise ratio are significant determinants of performance expectancy. Privacy and performance expectancy are significant determinants of intention to contribute	Schöndienst et al., 2011
No theory	User education & training; implementation stages; employee buy-in; integration with business system; attractiveness, control over data		QUAL: Survey, two case studies		Age. Privacy, security, experience, metrics, needs	Onyechi, & Abeysinghe, 2009

DOI/ TAM	IV: Usefulness, ease of use, compatibility, relative advantage, trialiability DV: Intensity of use	SNS (external use)	QUAN: A web-based survey published on open Internet sites	Quantitative analysis	Ease of use and compatibility have positive relationship with intensity of use	Corrocher, 2010
No theory stated	Relationships, sense of community, adoption barriers	Twitter & Facebook (external)	QUAL: open-ended interviews	Open line-by-line coding to identify themes		Cockerill, 2013
No theory stated	Prior training/ experience, satisfaction, ease of use		QUAL: Case study Interviews	Reflections based on the results of the interviews		Kim, 2009
No theory	Security, privacy, quality control	SNS (internal use)	QUAL: Descriptive			Warr, 2008
No theory cited	IV:Age, gender, network effects DV: usage	Blog (internal)	QUAN: survey		Network effects have positive affect on usage, they are stronger for younger people and women	Wattal et al., 2010
Model (Web 2.0. proclivity)	behavior functions and work roles	Adoption of web 2.0. tools **external**	QUAL: Survey of IT and manufacturing company employees			Cummings et al., 2009

A review of empirical studies (Table 2) indicates that, despite the dominance of

quantitative studies that take advantage of existing mature theories, descriptive research and

qualitative studies are also present in the literature on SCT adoption in organizations. Qualitative methods include content analysis (Lee, Hwang & Xia, 2006); ethnography (Chapman & Lahav, 2008), and case study analysis at the organizational or work team level (Barker, 2008; Kim, 2009; Onyechi & Abeysinghe, 2009; Ramdani & Rajwani, 2010). The mixed methods research is not employed even if, according to Onwuegbuzie, Johnson, & Collins (2009), mixed methods can lead to a richer understanding of phenomena. Authors use various instruments, but web-based surveys for data collection (Corrocher, 2011; Cummings et al., 2009; Schöndienst et al., 2011; Saldanha & Krishnan, 2012) are the most popular.

The author includes just a few studies which examined individual adoption and applied theories that explain the adoption on the individual level. In reality, there are more studies that focus on adoption of SCT at the individual level in comparison to research on organizational adoption. Studies of individual variables are important; however, in an organizational setting, acceptance of SCT on an individual level does not guarantee the diffusion of social software within organizations. Researchers' attempts to apply such mature theories as DOI or contingency theories or TOE are not as significant as one can expect. There are no longitudinal studies which measure the adoption process at various stages and observe mutual adaptation of technology and organization to each other. Researchers are not able to establish causation if they study the process of diffusion for a short period. In any longitudinal study, it would be possible to determine whether, as suggested Cooper and Zmud (1990), the determinants of initial adoption differ from those for later diffusion stages, i.e., adaptation, routinization, and infusion.

The analysis of empirical studies (Table 2) also shows that many researchers are looking for additional factors that have not been recognized by the established theories.

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Researchers create their theoretical models (Cummings et al., 2009) or combine a few existing ones (Corrocher, 2010; Nah and Saxton, 2012).

Most of the studies examine a singular factor or a set of related variables. Many researchers, particularly in the field of information technology and knowledge management, look at the communication systems from functionalistic perspectives. They focus on processes and tasks that should be performed by organizational members and which should inform the design or adoption of SCT. As existing studies primarily center on how various groups of the population used SM, and most of research is done outside of the organizational boundaries (boyd, 2006, 2007, 2008), the focus is on the discovery of individual factors that affect SCT acceptance, such as users' perceptions, motivations (Vuori & Okkonen, 2011) and attitudes toward social media (Krause, 2010; Stutzman et al., 2011).

What is written about organizational factors that impact SCT adoption?

Organizational Factors of Social Media Adoption

Organizational variables, such as organizational structure, culture, processes, size, and governance, are more likely to appear to be key determinants in the process of acceptance and diffusion of any new media or technology in organizations. Extensive research has been conducted to examine determinants of other types of technology adoption at the institutional level (Hameed, Counsell & Swift, 2012). Though the studies have been conducted in organizations that implement other types of technologies, they could shed a light on adoption of SCT. One important determinant of innovation and technology that has been included in studies on adoption of other types of technology is organizational structure (Baldridge & Burnham,

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1975; Moch & Morse, 1977; Kimberly & Evanisko, 1981; Grover & Goslar, 1993; Daugherty, Germain, & Droge, 1995).

Organizational Structure

Structural properties are objective aspects of the organization. These characteristics cannot be deduced from or reduced to any attribute of the organization's members (Hurley & Hult, 1998). Daft (2013) lists the following dimensions of organizational structure: centralization, formalization, specialization, standardization, hierarchy of authority, complexity, professionalism, and personnel ratio. Among most studied aspects are centralization and formalization. Centralization refers to the degree that the power and decision-making are distributed between members of the organization (Hage & Aiken 1967; Schminke, Ambrose, & Cropanzano 2000). Some organizations that employ distributed workforce adopt decentralized, team-based, and distributed structures (DeSanctis & Jackson, 1994; Drucker, 1988). They are described in the literature as virtual, network, and cluster organizations (Ahuja and Carley, 1999).

Advances in communication technologies have enabled such organizations to acquire and retain the distributed workforce. However, Ahuja and Carley (1999) noted that "despite the rapid increase in the number of organizations that are becoming distributed, little is known about the organizational or communication structures of such organizations" (p.741). Communication scholar Katz (1961) wrote, "[i]t is as unthinkable to study diffusion without some knowledge of the social structures in which potential adopters are located as it is to study blood circulation without adequate knowledge of the veins and arteries" (as cited in Rogers, 2003, p. 25).

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The author of the literature review was able to identify a few theoretical studies that emphasize the role of organizational structure in adoption of other types (not SCT) of communication technology (Damanpour & Gopalakrishnan, 1998; Damsgaard & Scheepers, 1999; Askool, Jacobs, & Nakata, 2010). However, organizational structure was not yet considered as a factor in empirical studies of diffusion of social communication technologies.

Even if scholars were asking questions about relationship between the technology and organizational structure (Woodward, 1965; Perrow, 1967; Thompson, 1967, Barley, 1986), the collected evidences were contradictory, and there was no conclusive evidence regarding the positive or negative relationship (Kimberly & Evanisko, 1981). Walton (1996) found no support for the expectation that a centralized organizational structure measured by top management support would significantly influence adoption of technology. There are evidences that decentralized organizations are more likely to adopt technological innovations (Moch & Morse 1977; Kimberly & Evanisko 1981; Grover 1993; Grover & Goslar 1993). On the other side, Ettlie, Bridges, & O'Keefe (1984) found a positive relationship between centralization and technology adoption. All these researchers studied the implementation of different types of technologies, and the results of their studies cannot be projected to the adoption of social communication technologies. According to Damsgaard and Scheepers (1999), intranet is initially shaped by existing organizational structure. What would happen with organizational structures if social features that support de-centralized structures were introduced to intranet? How will different types of organizational structures react to SCT, and which organization will adopt SCT faster? These questions have not been answered yet.

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Communication Structure

Organizational communication structure has been defined by many scholars. Johnson (1993) refers to it as "the relatively stable configuration of communication relationships between entities within an organizational context" (p.11). March and Simon (1958) stated that the organizational communication travels in one of the two distinct channels, either formal or informal. Informal communication represents the spontaneous, interactive, and rich communication that remains when organizational rules and hierarchies as the means for coordination are contradicted or eliminated (Kraut, Fish, Root, & Chalfonte, 1993).

In many organizations, officially designated communication channels (formal communication) are supported explicitly and implicitly by organizational structure, by written and unwritten rules of the chain of command, and by functional divisions and ingrained culture (Dow, 1988). Available communication technology enables formal communication. However, according to Kraut et al. (1993), informal communication structure are tolerated but not always supported by any communication technology.

In the context of communication studies, historically, communication structure could be categorized as centralized and decentralized, vertical and horizontal, formal and informal. A centralized structure has been defined as one in which interactions are initiated by a supervisor. A decentralized structure, at the extreme, is one that is fully connected and allows immediate feedback and error-correction (Tushman, 1979). Within organizations, structural patterns of communication become institutionalized over time (Burkhardt & Brass, 1990) and reflect organizational structure. Large traditional organizations with hierarchical and centralized organizational structures have vertical and centralized communication structure. Grunig and Hunt (1984) developed another typology of communication behaviors in organizations that

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Grunig et al. (2002) empirically tested in the International Association of Business Communication (IABC) study. Thinking in the terms of direction, Grunig describes a communication model as symmetrical if it includes two-way horizontal and vertical communication. Asymmetrical communication is primarily one-way and vertical, from top down. Grunig et al. (2002) emphasizes that a symmetrical system of internal communication is based on the principles of employees' empowerment and participation in decision-making. Managers and employees engage in dialog and listen to each other. Symmetrical communication fosters a participatory culture.

While traditional organizations are capable of changing their communication structure (DiMaggio & Powell, 1983) and do so as they adapt to change in the available technology (Finne, 1991), these changes are not researched thoroughly. Researchers have argued that, in virtual organizations, the communication structure that will emerge will be an amorphous web of connections (i.e., a network), constantly changing in response to their information processing needs. Dembeck (2013) in his dissertation acknowledges, "No research exists assessing the effect of social networking on informal communication networks, perceptions and behavior in an organizational setting" (p.5). The dearth of empirical studies on the associations between SCT and communication/organization structures makes it problematic to understand the SCT adoption process.

Conclusion

As this literature reviews shows, there is a need in a complex theoretical framework that includes all determinants of technology adoption and addresses their significance in various technology implementation stages. While many theories, frameworks and models are applicable

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to studies of SCT adoption at the organizational level, not all of them have received empirical support. Researchers primarily apply theories that explain adoption on the individual level or apply theories that include organizational context such as the theory of diffusion of innovation (Rogers, 1962; 2005) and TOE (Tornatzky, Fleischer & Chakrabarti, 1990). A meta-analysis of empirical studies on SCT adoption at both the organizational and individual levels indicates that the research concentrates on individual adoption of SCT and primarily on external use of social media. Only a handful of studies of the SCT adoption on the organizational level has been conducted. Although a range of factors influencing SCT adoption have been examined, many determinants have not been considered, for example, organizational and communicational structures.

CHAPTER THREE

This chapter describes the mixed methodology used for collecting data and testing the conceptual model and hypotheses developed in the previous chapter. The mixed methods study of social software adoption employs both a quantitative approach using a survey and a qualitative methodological approach using ethnography. The first section discusses in detail the qualitative methodology employed, the sampling, the instruments, and data collection procedures. The second section describes the quantitative portion of the research. The analysis of the collected data and the results are described in the next chapter.

Description of the Research Design

A particular worldview does not direct the choice of the methodology for the study. Even if quantitative method traditionally aligns with a post-positivist worldview and qualitative

assumes the constructivist approach (Creswell, 2009), in this study, the research objectives and the relationship between theory and data were main determinants for the selection of methods. As Simon (2006) explained, "When an approach is selected to investigate the problem, it should be the most suitable approach available" (p. 37). The chosen concurrent mixed methods research design, which combines both quantitative and qualitative approaches, seeks both explanations and exploration for understanding of the phenomena. Research claims are also stronger and have a greater impact when based on a variety of methods because quantitative figures can be persuasive, and qualitative research provides meaning and stories that can be used for illustrative purposes (National Research Council, 2002).

A concurrent mixed methods design involves two independent strands, one quantitative (QUAN) and the other qualitative (QUAL), each with its own set of questions, independent samples, method-specific sampling, data collection, and analysis techniques. Sampling design was not identical or nested but parallel (Onwuegbuzie & Collins 2007); time orientation was not sequential but concurrent, and both methodological approaches were equally important. There were a few reasons why the concurrent or parallel mixed methods design has been chosen for this study. A concurrent design allowed the researcher to practice the collections and analysis of both qualitative and quantitative data within a traditional qualitative or quantitative design (Creswell & Plano Clark, 2011). This type of mixed methods design limited the amount of meta-inferences and opportunities for data sets merging and for triangulation. However, it allowed a researcher to avoid a faulty comparison of findings and to decrease errors in the results of each strand. Since the final empirical results of both strands were conflicting between each other, the study rendered a more holistic picture without complete corroboration and triangulation between two sets of findings

According to the classification of mixed methods research designs offered by Tashakkori and Teddle (1998), the design that was used in the study may be called "multilevel research" (p.48). In a multilevel model, different methods are used to address different segments of population or levels within a system of a phenomenon. In the study, the researcher applied qualitative methods to investigate a multitude of SCT adoption factors and, in the same time, explored the impact of just four factors using quantitative methods.

One of the reasons of applying a qualitative method was the dearth of theoretical and empirical studies on all factors that affect adoption of social software in organizations. According to Edmondson and McManus (2007), the lack of a mature theory and empirical studies, or the presence of a newly developed phenomenon, such as the use of social software for internal communication, prompts using qualitative methods. In the same time, some factors and antecedents underlying high adoption rates have been studied previously, and the researcher can use prior mature theories to ask quantitative questions to find a correlation between these critical variables and adoption rates.

Qualitative Strand

The qualitative methodology recognizes research as an on-going, reflexive process influenced by new information obtained during the study of the phenomena (Maxwell, 2013). The review of theoretical adoption models revealed a set of factors that influence the technology adoption process. Empirical studies examined some of these factors, but some of them are still hidden. The primary objective of the study was to gather more information about the SCT adoption process in general and about the forces that affect the diffusion of social software in organizations.

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Research Question

The following qualitative research question has emerged from the reflection on literature and practice of the usage of social software to build communities of practice and internal communication:

- What are the principal factors that affect social software adoption in organizations?

Sampling, Data Collection and Instruments

Qualitative data derived from a few sources: the survey data (27 responses), 15 one-on-one interviews with community facilitators and managers, social media consultants and other people who play a crucial role in the adoption process; 7 conference presentations, posts on online forums, social networking sites, and 6 interviews with internal community managers, written or recorded by consultants and social software vendors' representatives. Using a typical approach to digital ethnographic fieldwork, the researcher entered online forums and communities of internal community managers and intranet administrators to become an active member for an extended period. This method revealed unexpected information that is otherwise obscured in surveys and targeted interviews. Virtual ethnographers have developed many different kinds of techniques and procedures to collect data. For example, "lurking" or reading online discussion without active participation (Mason, 1996); or "trace ethnography" when a researcher may collect artifacts (posts, shared data) without being an active participant of the community. As in traditional ethnography, it was better to interview community members after the researcher had studied the community using above mentioned techniques. A stratified sample was employed. The researcher intentionally searched for people with different backgrounds, experiences, and positions. The interview is the most advanced information gathering technique. In virtual

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ethnography, all types of interview are appropriate (structured, semi-structured, formal and informal) but the researcher selected a semi-structured interview (Appendix D) and started each interview with unstructured questions such as:

1. Tell me about your role in the community…

2. How has social software changed your organization?

3. Please prioritize factors that influence social software adoption.

Collecting data in a virtual environment raises the same ethical issues as conducting a face-to-face study. According to Oliver (2010), researchers must cultivate sensitivity to the research field because they affect the context, either directly or indirectly, depending on the role they adopt in the field – as complete observer, complete participant, observer as participant or participant as observer.

Data Analysis

The interviews, discussion board posts, tweets and other textual and visual artifacts were analyzed by coding, theming and clustering utilizing techniques described by Krippendorff (2013) and with the assistance of NVivo software. Coding is the lynchpin of analysis for this type of inquiry as it provides a means for identifying patterns in the data, and it facilitates reflection and construction of relevant emerging themes. The use of researcher memos, categorizing strategies, and connecting strategies are employed to perform reflective data analyses iteratively in order to address research questions and identify potential threats to validity (Maxwell, 2005). Another coder (a doctoral student) was invited to check concepts and categories for validity. She is a doctoral student in Psychology and was an expert in coding. She has assigned categories to a set of six interviews and assisted in creating a codebook. After all

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textual units had been coded, the researcher inserted categories that describe various adoption factors into the NVivo database. It allowed one to calculate the frequency of citing a particular factor, and to perform cross-tabulation of frequencies in order to find the difference between opinions of consultants, internal community managers, and IT support. In addition, the researcher employed the "clustering technique" described by Krippendorff (2013) to reveal factors that have not been included in previous technology adoption models.

In addition to the quantitative content analysis, the researcher applied an interpretative phenomenological analysis (IPA) (Smith et al., 2009). Following this methodology, the researcher attempted to "bracket out" her views of the adoption process in order to develop the description of adoption barriers and drivers from community and intranet managers' perspectives. The reality of an organizational informal virtual community is a combination of various perceptions of community members, including a people who "manage" or facilitate social software adoption. The author not only communicates experiences and viewpoints of study participants, but also positions them in a wider social, cultural and even theoretical context, and interprets their messages by providing critical commentaries on participants' sense-making.

Quantitative Strand

Data was collected to test the pre-established theoretical model of technology adoption and well-established theories of adoption. The objective of the quantitative part of the study was the testing of existing theories, rather than developing new theories. Therefore, the quantitative or deductive approach to research was chosen.

Research Hypotheses

The proposed social software adoption research model, which is derived and supported based on a meta-analysis of relevant literature, suggests the following hypotheses:

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Hypothesis 1 (H$_a$): Asymmetric communication structure is positively related to the adoption of social software.

Hypothesis 2 (H$_a$): Symmetric communication structure is negatively related to the adoption rates of social software.

Hypothesis 3 (H$_a$): Adoption rates of social software are positively related to hierarchical organizational structure.

Hypothesis 4 (H$_a$): Organizational size has a positive impact on SCT adoption rates.

A few instruments have been used to collect data. The online survey was conducted to measure dependent variables of organizational and communication structures. In addition, publicly available documents such as organizational charts were studied. The archival data on adoption and engagement rates were examined using analytical tools that are embedded in social intranet platforms. The author deliberated on using a survey to measure the adoption rates of social intranet platforms (Igbaria et al., 1989). However, the analytical tools that usually are a part of any social software package more accurately reflect the engagement rate, the frequency of use, and the usage statistics.

Target Population

Target populations are the persons, groups or firms selected for study. During the first phase, this study focused on organizations, so target populations were companies that implemented social intranet platforms or used social software for internal communication. Organizations are often differentiated based on their cultural (Schein, 1990), structural (Bums & Stalker, 1961), and strategic characteristics (Porter, 1980). Though these features are important for other studies, they were not significant in defining organizations as a target for the study. The

author of the study made the decision not to impose any constraints and not to limit the population based on these characteristics.

During the second phase, the employees of organizations that used SCT were the segment of the population sampled. The author of the study targeted internal community managers, portal or intranet administrators, and other employees who are crucial in the process of implementation of social software.

Sample

Given that the study targeted two populations, and there were two samples, the methods and sampling approaches varied. The first group consisted of a significant amount of organizations. With limited resources to survey or access all population units, there was a need to sample. A random sample was chosen. Each organization known to adopt social software was contacted and had an equal probability of inclusion in the sample. The researcher was not in a position to predict an actual size of the final sample before the study. The desired sample size was calculated based on the formulas and tables from Cohen's book (1988). The researcher planned the study in which she would do a bivariate correlation and regressions analysis and perform all the significance tests at $a = .01$. For the F test of the correlational analysis, she expected a medium population effect size, that is, $f2 = .15$. With a set of four independent variables, the required sample size was calculated as 118. Anderson and Gerbing (1984) found that a sample size of 150 would be sufficient to obtain a proper validity for models with three or more than three variables. Therefore, the sample of 118 -150 organizations was set as the target

number. The final sample included 35 firms and organizations from the ten groups of industries. The organizational size ranged from 20 to 94,000 employees.

The second group consisted of employees of an organization from the first sample. The power of the size and the significance of sampling error were not as significant in comparison to the first population's sample. The previous surveys of an organizational structure (Caruana et al., 1998; Ferrell & Skinner, 1988; Grunig at al., 2002; Kim, 2005) showed that organizational members are homogenous in their perception of organizational structure and the correlated communication structure. In addition, secondary sources such as organizational charts and case studies were used to confirm organizational structures of companies. Therefore, the decision of how many people to approach in an organization was not detrimental. Grunig at al. (2002) surveyed 14-20 people using the IABC questionnaire per company. Kim (2005) asked just a few employees to fill out the same survey in each company; the researcher received up to five responses to the questionnaire from each organization.

Sampling Procedure

For posited research questions, during the first phase of data collection, a stratified random sampling was used to target organizations engaging in the utilization of social software. One of the most direct, but not necessarily the most comprehensive, way to locate companies and organizations that employ social software was to contact vendors who offer such software. At the time of the study, seven social software companies were contacted: Microsoft, Cisco, Open Road Communications, Sitrion, Interact Intranet, Yammer, and Jive. Many vendors refused to provide data about clients; however, all of them publish so-called "testimonials" from their clients, and some of them host forums or online communities for their software users. The researcher also

used a snowball and convenience sampling to locate research subjects. Once companies and organizations that acquired social software were located, the representatives of these companies were asked for permission to conduct research in their respected organizations.

Initially, a non-probability sampling method was applied to recruit respondents to answer the IABC questionnaire. Community managers were informed of the purpose of the study, of criteria for participation, and were asked for permission to survey potential participants (see Appendices A and C). Internal community managers and employees of organizations willing to participate in the study received an e-mail that included the electronic link to access the survey and the informed consent statement. Later, the researcher used social networking sites such as LinkedIn to locate and survey employees from organizations in the research sample.

Instrumentation for Quantitative Data Collection

The study adopted a few instruments to collect data from organizations. A web-based self-administered survey was used to collect data on two constructs: organizational and communication structure. Survey items were adapted from existing instruments used in past research. The researcher also collected data from analyzing organizational documents and intranet or social software archives.

Measuring organizational and communication structure.

To measure organizational structure, and internal communication, the IABC study questionnaire (Grunig et al., 2002) was adopted (Appendix A). During the previous studies, the 19-item scales showed moderate to high reliability. Nine items measured such categories of organizational structure as centralization and formalization. Three items measured asymmetrical, and seven items measured symmetrical communication. All of the items were Likert-type agree or disagree statements.

Item reliability and scale validity are often used to evaluate measurement models. Reliability can be assured through composite reliability or the reliability of each item, Cronbach's alpha, and factor loading. Factor loading should be greater than 0.7, which can be viewed as highly reliable. In order to have the required validity, the composite reliability should be higher than 0.7. The instrument used in the study showed the overall Cronbach's alpha of .71 for the structure, .78 for asymmetrical communication scale and .87 for the symmetrical scale. In Kim's study (2005) that used the same instrument, factor loadings for centralization ranged from .45 to .90, showing moderate to high-construct validity, and loadings for formalization ranged from .44 to .74, showing moderate validity.

Adoptions rates.

Usually, adoptions rates are measured by surveys (Igbaria et al., 1989; Davis et al., 1989; Limayem & Hirt, 2003; Venkatesh et al., 2008). However, surveys are not always appropriate tools to collect this type of data. Survey research cannot precisely measure engagement rate or the usage of technology, but can only quantify self-reports of past action. With the advancement of technology, the automatic collection of social networking and intranet information has become possible. Researchers examined mail logs (Lada & Eyten, 2005), private social network information (Guy et al., 2008), and other automatically collected archives of data.

In the study, the researcher collected measurement data by using archival data from five different social intranet analytical and monitoring tools. Each commercial social software has its own passive monitoring tool. These tools allow the sharing and aggregation of social intranet data across organizations. There are a few adoption performance parameters that could be extracted from intranet archives:

1. Level of initial use – the fraction (%) of the population that began using social features of the intranet from all community members

2. Engagement rate or Extent of adoption – the highest fraction (percentage of the population) that used social features of the intranet during the adoption process, the depth and breadth of adoption

3. Adoption rate or time –the time elapsed from SCT implementation to the moment when the extent of adoption reached

Adoption rates for this study indicate the number of months it took for social intranet to reach the extent of adoption.

Control Variables.

In the study, as changes of dependent variables are not wholly attributable to two independent variables, the control variables were used to decrease the risk of overstated interpretation capacity of independent variables. The control variables of this study consisted of two items - organizational size and the industrial sector. These variables were collected by using survey data and also publicly accessible company records. The third control variable, an organizational culture, had to be taken out since its study cannot be limited to the survey of a few employees in organization and required painstaking assessment of many artifacts because they are subtle and often ambiguous. Besides, large organizations have many subcultures or even lack of the dominant culture. The process is better conducted as an ethnographic or an anthropological investigation which extracts narrative, underlining values and assumptions. The researcher was not able to conduct this type of research in a short period, and that is why the important variable "culture" was eliminated from quantitative analysis.

Data Collection Procedures

The data was collected during six months and resulted in data sets from 35 organizations. Unusable survey responses were eliminated immediately. Various methods were used to invite potential respondents to participate in the survey. In each case, a brief description of the research was given, and a link provided to access the survey. First, e-mails with a link to a web-based survey were sent directly to individuals known to work in organizations utilizing social intranets and to be responsible for social intranet implementation. These individuals were asked to post an announcement on an intranet and send a link of the survey to volunteers. Secondly, messages with a link to the survey were posted in the appropriate areas of open internet forums, social networking websites, and online communities for fans or users of social software. The researcher also contacted employees of surveyed organizations directly using LinkedIn profiles. The researcher designed and marketed the blog Social Intranet (http://socintranet.blogspot.com) where she posted an invitation to participate in the research study and useful information for internal communities' managers and social software users. The researcher also became an active member of five communities of practice for social software users and communicated with potential study subjects online.

Data Analysis and Challenges

Concurrent multi-strand design does not require integrating the results when two methods are used to answer different research questions (Creswell & Plano Clark, 2011). This type of mixed method research design allows the author to collect and analyze the quantitative and qualitative data sets separately. Combining techniques in mixed methods studies are challenging for an inexperienced researcher. One has to be proficient in both methods of collecting and analyzing data and, in the same time, know how to design and conduct mixed methods research. One of the reasons the researcher decided to select the mixed methods research design was for an

opportunity to gain experience in utilizing qualitative and quantitative methods so mistakes that will be made using one method will not affect another portion of the study. Another challenge in a concurrent mixed methods research was the integrating results of all strands. Again, the concurrent design gave the researcher an option not to merge data but to report it separately. In the same time, the findings from two strands were compared to reach a few meta-inferences.

Collected data from the quantitative structured survey was grouped by organization. All responses from the employee questionnaire were aggregated, using the mean of each variable and the attribute of the organization. In addition, the data about the centralization was verified by supporting documents (organizational charts, annual reports and other documents). Since, the researcher looked at the impact of each structure on adoption rates, the correlation between the combined score for three scales for organizational structure (formalization/centralization/ stratification) and adoption rates, and for asymmetrical/symmetrical communication and adoption rates were analyzed.

The examination of the archives of analytical software provided a detailed snapshot of employees' engagement and of the usage statistics of social software. The engagement rate is a very important statistical figure and is calculated differently by social software administrators. The researcher asked participants only to submit the percentage of users who use social software and for the participants to post content at least once a month. The adoption rate usually presented at a time during which the technology was adapted or actively used. The full extent of adoption, which is the degree to which the technology was adopted, is 100% of the population. Not all social intranet platforms are fully adopted during the time frame of the study, so the researcher proposed that each participant submit the amount of months which it took each implementation to reach the highest engagement rate. The SPSS Statistical Graduate Pack

(SPSS Inc., 2012) was used for statistical analysis. The correlation technique was employed to determine the overall relationships as proposed in the hypotheses. Since the author attempts to understand the relationship between variables, the correlation analysis is the most appropriate method for this study. According to Leedy and Ormrod (2010), correlational design is a type of quantitative research that involves examining possible relationships among variables. In the study, correlational design examined the relationships between organizational structure, communication structure, size, industry, and adoption rate of social software in organizations.

In addition, the author performed multiple or multivariable regression analysis to identify and quantify the factors that determine adoption rates and that could be included in the SCT adoption model. This type of analysis, if it is conducted with only singular or two variables, can cause "omitted variable bias", so the researcher used controlled variables that have been previously tested.

Summary of Chapter Three

This chapter summarized mixed methods methodology of the collection and analysis of research data. In the quantitative part of the study, the modified survey from the IABC study questionnaire (Grunig et al., 2002) was used to collect data from a sample of organizational members via SurveyMonkey, an online survey application. Archival data from social software analytical reports was also collected and analyzed. Data analysis was performed by utilizing SPSS application. In the qualitative part of data collection, ethnographic methods were employed to collect data and content. Interpretative phenomenological analysis, with assistance from NVivo software, was used to analyze data. Standard precautions were exercised to ensure the security and privacy of the data for this study and to ensure the participants were protected. In

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Chapter Four, the researcher details the steps of the analysis and presents a discussion of the results of mixed methods examination of the sampled data.

CHAPTER FOUR

In this chapter, the researcher presents the findings or inferences of mixed methods data collection and analysis. First, the results of correlation and regression analyses of quantitative data are presented; this is followed by the quantitative and qualitative analyses of the data collected by using a qualitative approach. Both types of inferences have been pulled together to reach meta-inferences in Chapter Five.

Quantitative Strand

The purpose of this part of the study was to determine if affiliation with industry, organizational, or communication structures and size have correlation with social software adoption rates or could be considered as determinants in the social software adoption model. The findings from correlation and regression analyses are presented and discussed.

Participant Demographics

As mentioned in Chapter Three, two web-based questionnaires were used to collect data from businesses and organizations classified by size, industry and the highest engagement rates with social software that have been reached. One questionnaire (Appendix C) was sent to internal community managers or people responsible for the implementation of social software. Another questionnaire (Appendix A) was e-mailed to random employees from targeted organizations. A total of 123 members from 35 organizations and 35 community managers participated in the survey.

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The average organizational size in the sample was about 21, 000 employees; most of them had implemented social software more than three years prior to the study and belonged to ten industries' groups.

Table 3

The Average Amount of Employees in Researched Organizations

	N	Minimum	Maximum	Mean	Std. Deviation
Amount of employees	35	14.00	94000.00	21381.0286	25186.53812
Valid N (likewise)	35				

Table 4 The Average Amount of Months of Social Software Use by Organizations

	N	Minimum	Maximum	Mean	Std. Deviation
First Year & month of adoption	35	12.00	72.00	39.8286	17.32133
Valid N (likewise)	35				

Table 5 Frequency of Industries

Industry name	Frequency	Percent	Valid Percent	Cumulative Percent
Manufacturing	8	22.9	22.9	22.9

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Electricity, gas and water supply	1	2.9	2.9	25.7
Construction	1	2.9	2.9	28.6
Wholesale and retail trade	4	11.4	11.4	40.0
Transport and communication	7	20.0	20.0	60.0
Financial intermediation	5	14.3	14.3	74.3
Real estate, renting and another business	4	11.4	11.4	85.7
Education	2	2.9	2.9	88.6
Public administration	1	2.9	2.9	91.4
Other community services	3	8.6	8.6	100.0
Total	35	100.0	100.0	

Geographically, employees and branches of companies were widely dispersed; however, most companies' headquarters were located in United Stated, Canada, Australia, and New Zealand.

Presentation of the Data

During the analysis of quantitative data, the following hypotheses were tested:

Hypothesis 1 (Hα): Asymmetric communication structure positively related to the adoption rates of social software.

Hypothesis 1 (H$_o$): There is no relationship between asymmetric communication structure and social software adoption rates.

Hypothesis 2 (Hα): Symmetric communication structure negatively related to the adoption rates of social software.

Hypothesis 2 (H$_o$): There is no relationship between symmetric communication structure and social software adoption rates.

Hypothesis 3 (Hα): Adoption rates of social software are positively related to hierarchical organizational structure.

Hypothesis 3 (H$_o$): There is no relationship between organizational structure and social software adoption rates.

Hypothesis 4 (Hα): Organizational size has a positive relationship with social software adoption rates.

Hypothesis 4 (H$_o$): There is no relationship between organizational size and social software adoption rates.

In addition, the researchers explored predictive abilities of social software adoption factors in order to answer the following research question:

What factors predict adoption rates of social software in organizations?

The six independent variables (IV) to impact adoption rates were selected from among a large number of variables that represent adoption factors. Among them, two variables describe communication structure and four variables describe organizational structure. To avoid multicollinearity, which occurs when you have two or more independent variables that are highly

correlated with each other, the author combined values of three variables out of 5 (formalization, stratification, and centralization) and created another variable, an organizational structure.

A model that includes only two factors, organizational and communication structure, is biased and cannot represent a true model of adoption of social software in organizations. The researcher added two additional control variables that have been validated by previous studies such as the size of organization (amount of employees) and affiliation with industry.

Prior to conducting correlation and regression analyzes, the researcher has checked for linearity, normality and interdependency of independent variables. Linearity assumption does not apply to nominal variables and has to be applied with caution to ordinal variables. The author made a decision to transform a nominal variable (industry) and ordinal variables (organizational and communication structure) and proceeded with using non-parametric tests.

Organizational and Communication Structures

The bivariate correlation analysis was applied to find the existence, the strength, and the statistical significance of relationships between social software adoption rates and two types of structures: communication and organizational; and to test hypotheses:

Hypothesis 1 (H): Asymmetric communication structure is positively related to the adoption of social software.

Hypothesis 2 (H): Symmetric communication structure is negatively related to the adoption rates of social software.

Hypothesis 3 (H): Adoption rates of social software are positively related to hierarchical organizational structure.

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Table 6 Spearman's Correlation Matrix for Organizational Structure, Symmetrical and Asymmetrical Communication and Adoption Rates

			Organizational Structure	Adoption rates	Asymmetric communication	Symmetric communication
Spearman's rho	Organizational Structure	Correlation Coefficient	1.000	.584**	.664**	-.572**
		Sig. (2-tailed)	.	.000	.000	.000
		N	35	35	35	35
	Adoption rates	Correlation Coefficient	.584**	1.000	.517**	-.309
		Sig. (2-tailed)	.000	.	.001	.071
		N	35	35	35	35
	Asymmetric communication	Correlation Coefficient	.664**	.517**	1.000	-.376*
		Sig. (2-tailed)	.000	.001	.	.026
		N	35	35	35	35
	Symmetric communication	Correlation Coefficient	-.572**	-.309	-.376*	1.000
		Sig. (2-tailed)	.000	.071	.026	.
		N	35	35	35	35

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The Spearman correlation coefficient value of 0.584 (p = .000) confirms that there appears to be a moderate positive correlation between the adoption rates and organizational structure. Since higher numbers of "organizational structure" indicate centralized, formalized and stratified hierarchical structure, one can make a conclusion that the process of adoption of social

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software takes longer in hierarchical organizations. The hypothesis (H_a): "Adoption rates of social software are positively related to hierarchical organizational structure" should be accepted. Even if the established positive relationship between these two variables has moderate strength, it could be a misleading relationship affected by the presence of the true casual factor or the small size of the sample. The cause and effect relationship cannot be established without further investigation.

The Spearman correlation coefficient for the pair of adoption rates/ asymmetric communication has the moderate positive value of rho=0.517 ($p. = 001$), and for the adoption rates/symmetric communication, the Spearman correlation coefficient has a weak negative value and is statistically insignificant (rho = - 0.309, $p. = 0.071$). Again, one can accept the Hypotheses 1 and Hypothesis 2 that stipulate that in organizations with asymmetrical communication structure, social software diffuses slower in comparison with organizations with symmetrical communication structure where communication goes up-down and laterally. Null hypotheses that postulate no relationship between communication structure and adoptions rates should be rejected. However, the result could be another example of a misleading or false causative relationship.

Outside factors can affect the correlation between adoption rates and organizational structure. The factor that affected the results of correlation analysis was the length of time during which social software was used before the organization was surveyed. Since one of the purposes of using social communication technology was to change communication structure, one can assume that the communication structure may have changed from symmetrical to asymmetrical communication, and that this affected the strength and direction of relationship between adoption rates and communication structure. The researcher performed bivariate correlation analysis for

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the small group of organizations that used social software for 18 months (average adoption time). It has been discovered that of the correlation coefficient for the pair, adoption rates/asymmetric communication structure had larger value, but was not statistically significant (*rho* = 0.775, *p.* 0.225) and the relationship between symmetric communication and adoption rates was also stronger, but not statistically significant (*rho* = 0.775, *p.* 200). The change of organizational structure, on the other hand, is a gradual and longwinded process, so the type of organizational structure had not changed drastically and presumably did not influence the correlation outcomes as much.

The relationship between organizational structure and adoption rate was also stronger in companies that reached the higher engagement rates. For companies in which more than 60% of employees actively used social software, the coefficient of correlation had a value of 0.588 versus rho = 0.384 for companies where engagement rate was low.

Organizational Size and Industry

In the studies that have been done by other researchers (Harris, 2013; Nah & Saxton, 2012) the size of organizations and the industry show moderate correlation with adoption rates of social software. When these two variables were measured against the dependent variable in the study, the correlation was low or not statistically reliable. In the case of the size or the amount of employees, the Pearson correlation coefficient was 0.412 (*p.* = .000), and for variable "industry", the Spearman's rho has a value of 0. 132 (*p* = 0. 451).

Engagement Rates

In addition to collecting data on social software adoption rates, the author acquired information about employees' engagement rates or the percentage of active users who accessed

and used social software on a monthly basis. Due to inconsistency in data collection and reporting by several software packages, the sample size of organizations that provides this type of data was smaller (31 organizations) in comparison to the amount of organizations that supplied adoption rates. However, the author decided to find the average percentage of active users in examined organizations and to examine the relationship between engagement rates and organizational and communication structure. The depth and breadth of adoption of social software internally on average was 60%. The employees used social software more actively in organizations with less centralized and hierarchical organizational structure (rho = -0.598; *p.* =0,000) and where communication structure was more symmetrical (rho = -0.552, *p.* = 0.001).

The Model of Adoption of SCT

The author performed a multivariable regression analysis to find out if the set of independent variables (organizational structure, communication structure, industry, and organizational size) could predict social software adoption rates. Based on the results of multiple and bivariate correlation analyses, three independent variables indicated the presence of the relationship with the adoption rates and could be added to the adoption model. However, the affiliation with the particular industry was not a statistically strong factor and was omitted from the regression model.

Table 7 Coefficients from Standard Multiple Regression

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	-2.716	8.884		-.306	.762
Amount of employees	.000	.000	.283	1.623	.115

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Asymmetric Com	.004	.013	.058	.275	.785
Symmetric communication	.004	.005	.156	.838	.409
Organizational Structure	.013	.007	.410	1.871	.071

a. Dependent Variable: Adoption rates

A multiple regression was performed to predict adoption rates from organizational size, structure and communication structure. The set of three variables statistically significantly predicted adoption rates, $F (3, 31, 36) = 3.230$, $p= 0 .014$, $R^2 = 0.549$. However, taken separately, none of the three variables added statistically significantly to the prediction, since for all three of them $p >.05$.

In order to control for the effects of covariates or to test the effects of predictors independently from the influence of others, a hierarchical multiple regression procedure was also done using all independent variables. This hierarchical multiple regression analysis confirmed that neither the first model (size and industry), nor the second model (size, industry, and communication structure) predicted scores on the DV to a statistically significant degree (p.>0.05). The only model that had statistically significant predictors was the model from Table 9 which consists of the organizational size and structure.

Table 8 Hierarchical Regression Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.412[a]	.170	.145	12.19619
2	.533[b]	.284	.239	11.50455

a. Predictors: (Constant), Amount of employees
b. Predictors: (Constant), Amount of employees, Organizational Structure

Model		B	Std. Error	Beta	t	Sig.
		Unstandardized Coefficients		Standardized Coefficients		
1	(Constant)	10.844	2.721		3.986	.000
	Amount of employees	.000	.000	.412	2.598	.014
2	(Constant)	4.030	3.964		1.017	.317
	Amount of employees	.000	.000	.278	1.725	.094
	Organizational Structure	.012	.005	.363	2.255	.031

a. Dependent Variable: Adoption rates

Summary of Findings

As a result of quantitative analysis of data from the questionnaire, which included correlation and regression analyses, the researcher concluded that the proposed social software adoption model needs to be revised. Some of the factors have little impact on adoption rates (the industry) or has insignificant correlation with adoption rates (symmetrical communication structure). Additional factors have to be measured and added to the adoption model to serve as predictors of how fast employees will adopt social software inside an organization. Organizational structure, communication structure, and size were the only factors that correlated with adoption rates, with the degree of formalization, stratification and centralization of organizational structure being the largest influence on the duration of the adoption process. As regression analysis has shown, the adoption model of social software may include only two statistically significant predictors: characteristics of organizational structure and size.

<div align="center">**Qualitative Strand**</div>

A section of Chapter Four depicts the findings of the content and phenomenological interpretative analysis of data collected using ethnographic methods.

<div align="center">**Participant Demographics**</div>

Data for the qualitative study are drawn from the questionnaire (27 respondents) and semi-structured, open-ended interviews with fifteen people actively involved in the social software adoption process at organizations. In addition, the researcher analyzed six interviews that were conducted by other researchers; consultants; social software vendors' representatives; eight conference presentations; three case studies, and ten posts from discussion boards, forums, and tweets. A purposeful sampling process was employed to solicit interviews from internal community managers, social media evangelists, intranet administrators and other players in the process of social software adoption. Below are the tables that illustrate demographic data relevant to the subject of the study.

Table 9 Positions and Titles of Participants

Position	#
Community Manager (Internal CM, Enterprise CM, Community Strategist)	13
Intranet Managers, Digital project, Enterprise Portal, IT systems Administrator	13
Social Strategist (Director of Social Strategy, VP of Social Strategy)	2
Knowledge Manager	2
Collaboration Manager (SM & Collaboration; Digital Solutions & Collaboration, Collaboration Systems)	6
Communication Department (Internal Communication, Corporate communication)	6
Marketing Department	1
Executives	4
Consultants	5

Table 10 Education and Work Experience of Participants

Education/Experience	#
IT	12
Business	12
Communications	9
Marketing	6
Education	4
Human Resources	2
PhD students	3

Presentation and Discussion of Findings

The author used mixed methods not only to collect data for this study but also to analyze collected data. A detailed description of analytical methods and instruments can be found in Chapter Three, but one instrument that facilitated quantitative content analysis and qualitative interpretive analysis should be noted here. The researcher employed NVivo 10, a software that allows one to present, visualize, analyze and revisit data in a cyclical and iterative way. Data analysis yielded a number of interesting adoption patterns which aided in the designing of a new classification for SCT adoption factors.

Adoption Process

Before the author proceeds to discuss findings relevant to the main research question (factors that affect the social software diffusion), she would like to share some general observations in regards to the process of adoption of social software in organizations. During the interviews and the discussions at online forums and conferences, it became clear that how social software implementers view the process of adoption and organizational change in general plays a significant role in what they have identified as adoption factors. For some, the adoption process for social software inside organizations is similar to the adoption process for all new technologies. Three interviewees shared their analytical reports with the engagement rates on a

month by month basis. The diffusion process at all three organizations mirrors Roger's Parabola at Figure 3 (Rogers, 2003) where, after initial interest and high usage by early adopters, the amount of active users tended to decline. One participant noted that the adoption of Yammer (social software) was similar to the model described by Riemer, Overfeld, Scifleet, & Richter (2012) called SNEP: "I feel that Yammer is following the SNEP model: start-up, neglect, excitement and productivity levels. "
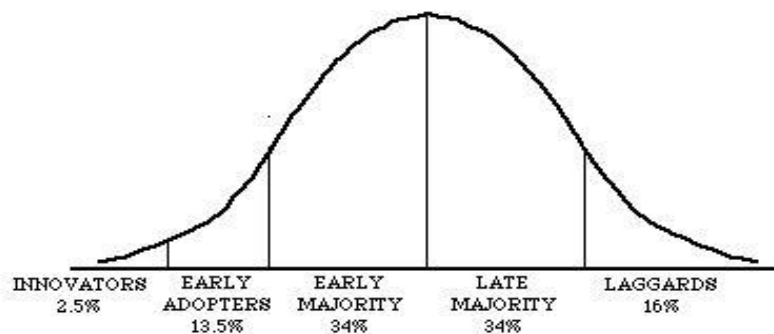

Figure 3 Roger's Innovation Diffusion Bell Curve
Source: Rogers, E.M. (2003). Diffusion of innovations. NY: The Free Press

A number of participants perceived the adoption process of social software to be different from other types of technology implementation, and see this as a process of organizational change by-product. There was also a group of KM specialists who recognized this process as a knowledge management activity. The discussion among internal communities and intranet managers revolved around the struggles between a strong community and technology adoption management versus a more organic approach of nurturing communities and 'playing" with technology. In addition, there were a small number of proponents of the "hands-off approach" where an intranet administrator initially introduced the technology, but later let the network or communities build themselves. The quantitative content analysis indicated that the majority

(75%) of internal community managers, intranet managers, consultants, and communication specialists supported the idea of using various managerial, marketing, and public relations techniques and technology (gamification, integration, and customization) to increase employees' engagement with and use of social software. In the following sections of this chapter, the author deliberates more on the relationship between study participants' perceptions of impact factors and their views or attitudes toward social software, organizational change, and the adoption process.

Research Question Findings

The aim of this part of the research study was to identify all possible factors that may impact the adoption process and to answer the following research questions:

What are the factors that affect social software adoption in organizations?
What factors do practitioners (people involved in the social software adoption process at organizations) perceive as important?

In Chapter Two, the author presented the results of the meta- analysis of theoretical and empirical studies on technology adoption in Table 1. In this Chapter, based on the analytical review of various theories of adoption, the author clustered potentially influential factors into four groups: 1) individual factors; 2) organizational influences; 3) technology characteristics & affordances; and 4) environmental factors (see Figure 4).

Figure 4 Classification of SCT Adoption Factors Based on the Theoretical Models

Adoption

|	
Technology	Attributes or Characteristics , Affordances, Types Suppliers
Environment	industry, competitors, social influencers, government
Organizational factors	structures, communication processes & channels, size, resources/ slack, strategies, capacities, governance features, tasks
Individual factors	age, gender, charactersics, attitudes, experience, perceptions, expectations, actions

The content analysis of interviews and other sources brought the following model (see Figure 5) which presents four classes of factors with specific factors under the umbrella of each class. The researcher identified elements perceived as important by internal communities' managers and other SCT adopters previously not included in technology adoption models.

For example, culture, organizational needs, capabilities, work conditions and communication structure were added as important influencers to the group of organizational factors. In addition to individual antecedents of technology or to innovations of adoption that were included in other theoretical models, such as attitudes, perceptions, expectations, demographics and actions, the study revealed the importance of added factors such as emotions, needs, roles, and behaviors of employees that use social software. To the group of technology

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characteristics or attributes, the author has added a degree of integration into IT infrastructure and business processes, architecture/ design, scalability, the level of customization, and richness.

Figure 5 A Hierarchy of Factors that Affect Adoption of Technology Based on the Content Analysis
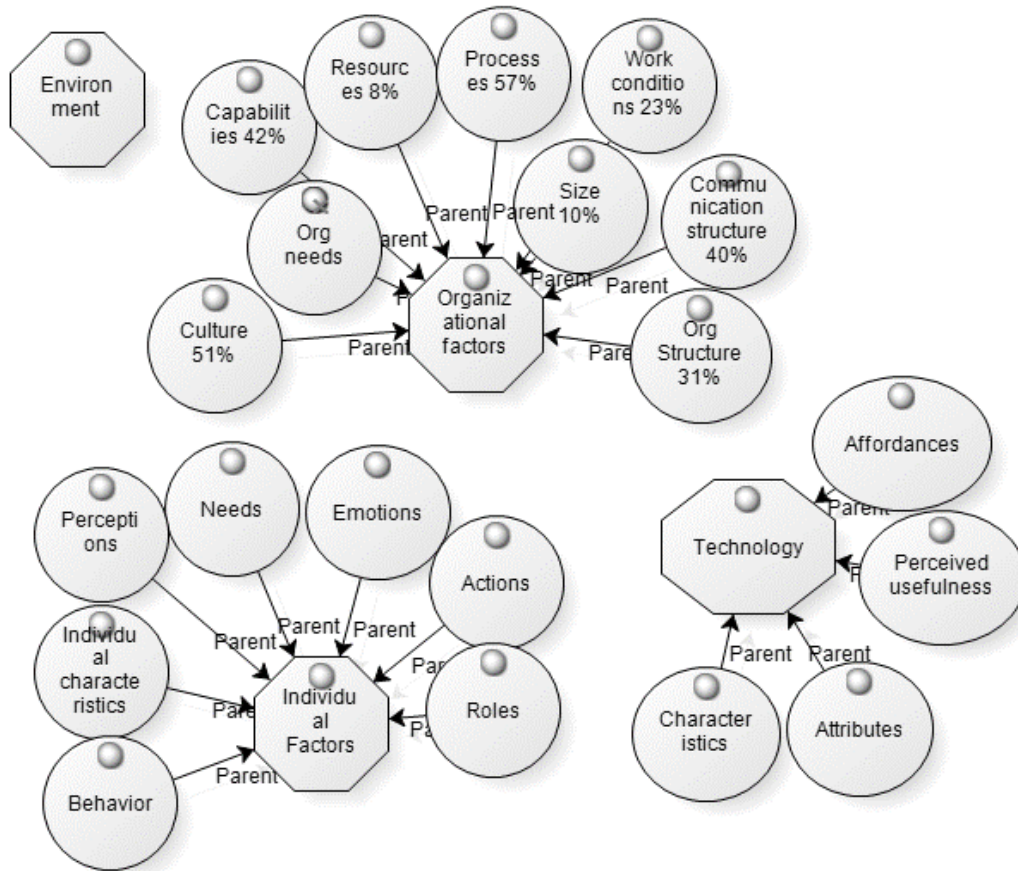
In addition to revealing new factors, the content analysis examined the frequency of references to them in texts. 97% of sources (community and intranet managers, social evangelists and consultants) considered individual factors as the most influential (336 references). Organizational factors were referred to 193 times by 92% of sources and technology was referenced 146 times in 78% of sources. Environmental factors such as competitors, industry, or society were remarked upon just five times. Using descriptive statistical methods, the researcher

established the list of important factors from the perspectives of people who carried out SCT adoption:

1. Individual factors/Roles/Executives support & participation – 58%

2. Organizational factors/Culture – 51%

3. Technology/The degree of integration – 38%

4. Individual factors/Actions/Training -36%

5. Individual factors/Roles/Advocates or Champions – 28%

6. Technology/ The ease of use – 24%

7. Organizational factors/Processes/Integration into communication process -24%

8. Individual factors/Actions/Management of adoption process – 24%

Since the data was collected using different types of instruments and methods (a structured questionnaire, interviews, and digital ethnography), the author has analyzed two sets of data separately. The data from a structured questionnaire (Series 2 from the Figure 9) show a strong correlation with the data collected by interviewing and textual content analysis of unstructured textual data (Series one from the Figure 6).

Figure 6 Comparison of Two Data Sets: Data from the Survey vs. Data from Interviews
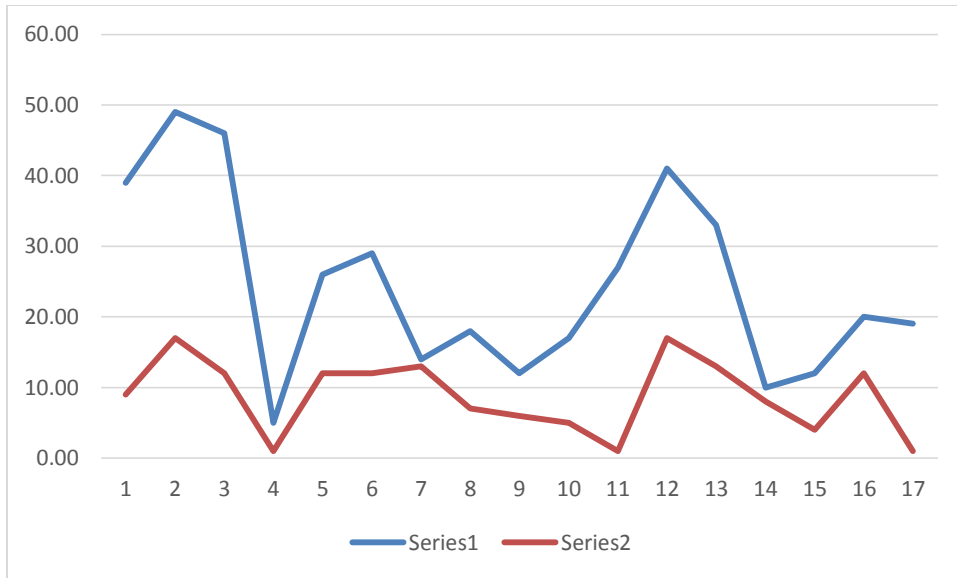
The author has established that there is a discrepancy between what scholars deduced to be significant adoption pre-determinants and what practitioners perceived to be influential factors. Let us look more closely at four groups of adoption factors to review the differences.

Individual Factors

The group of individual factors embraces not only personal characteristics of individuals but also their behavior, actions, and roles. In some classifications and empirical studies, the focus was on the individual level analysis, or only on perceptions and attitudes of the individual toward technology. During the content analysis, the author and the coder assigned the category "individual factor" when an interviewee or a survey respondent indicated that a particular individual behavior, action, or characteristic played a role during the adoption.

The NVivo tree map (Figure 7) displays the difference in assigned weight for each factor.

Figure 7 Individual Adoption Factors
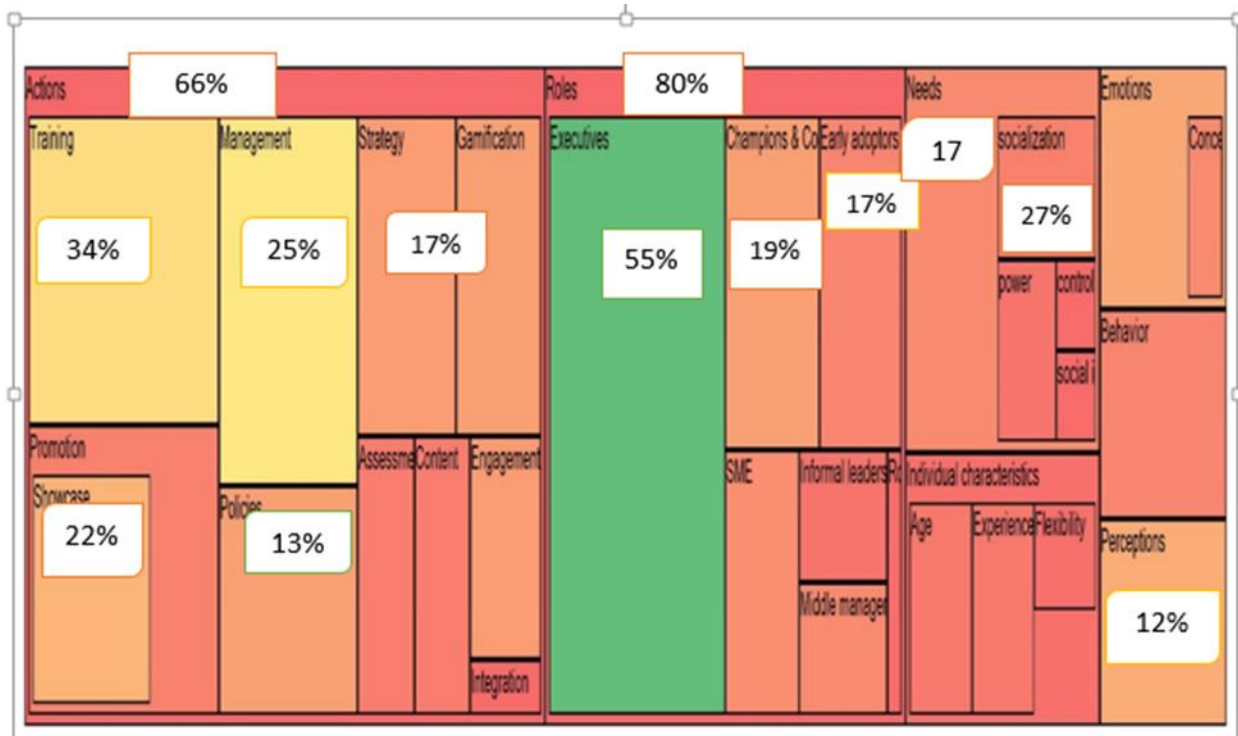
As we can see from Figure 7, a group of people who were employed to manage, facilitate, and assist with social software adoption did not perceive all individual factors as equally important. Such constructs as emotions, roles, and behavior have never been classified as adoption factors by theorists and have never been studied empirically by researchers. Rogers (2005) recorded "actions"; "extent of change agent's efforts", and "individual and leaders' characteristics" as factors, but never specified what actions or efforts may be considered as factors.

Actions.

There is no surprise that people who drive social software adoption consider "Actions" (66%) as a leading factor. Cross-tabulations between demographics of the sample and an individual factor "Actions" (Table 11 and Figure 8 and 9) revealed that people with different educational backgrounds, positions, and experiences preferred different actions. Thus, community and intranet managers (CM & IM) and communication specialists (CS) with

backgrounds in business administration (BA), human resources (HR), and IT regarded community management, strategy, and policies development as important drivers of social software adoption.

Table 11 Cross Tabulation between Factor "Actions" and a Respondent's Position/Education

	Bus Ed	C	C Ed	CM	HR	Intranet Managers	IT Ed	IT Manager	Marketing Ed
Management	15.16%	19.42%	7.37%	8.8%	1.68%	13.97%	20.19%	9.96%	3.45%
Policies	17.07%	9.02%	9.02%	11.06%	0%	11.93%	26.86%	15.03%	0%
Strategy	0%	31.47%	21.91%	7.17%	5.01%	2.65%	11.11%	18.03%	2.65%

Figure 8 Cross Tabulation between "Strong" Actions and Education/Position
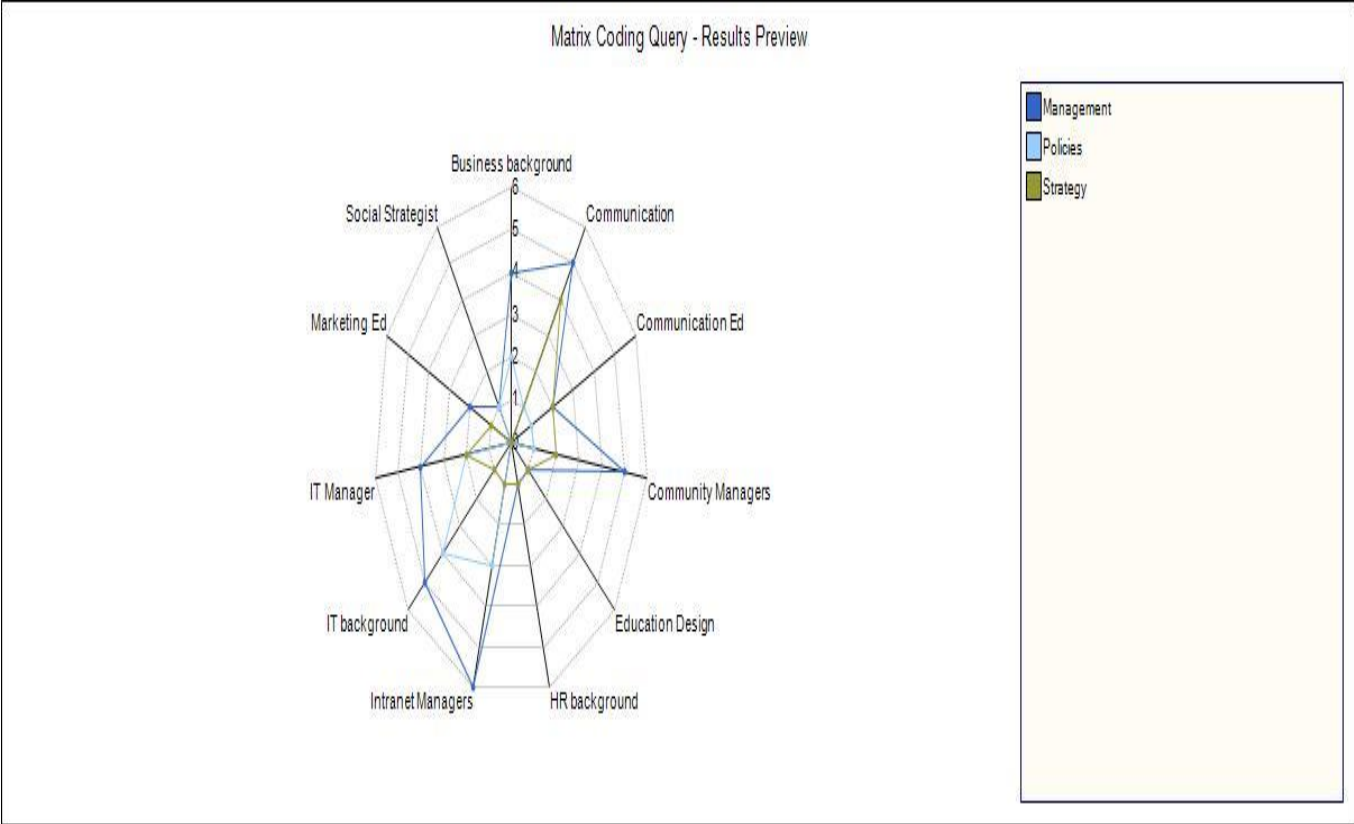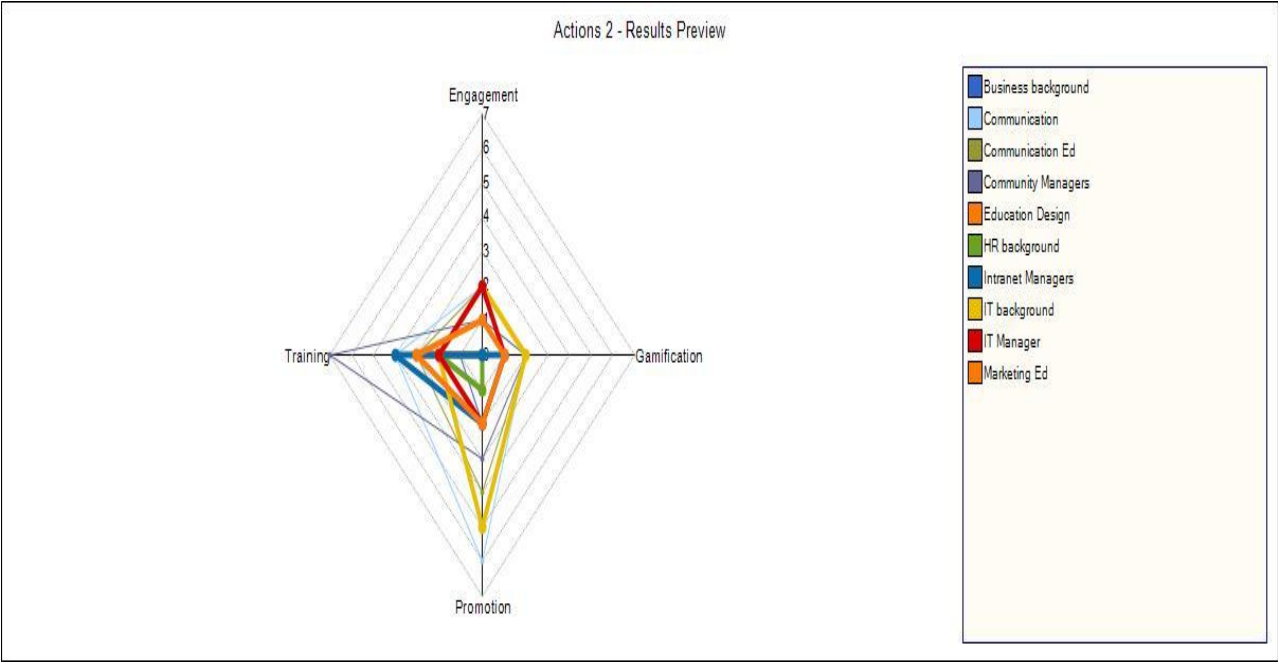
Figure 9 Cross Tabulation between Soft "Actions" and Education/Background/Position

Cross tabulation between position, education and preferences of "soft" actions such as training

(37%), promotion (use cases) (22%), facilitation/engagement (12 %) and gamification (8%)

points to the interesting observation that people with IT backgrounds perceived "use cases," training, and gamification as key factors. Community managers preferred training; people in charge of internal communication with backgrounds in communication studies leaned toward promotion and "success stories."

As we can see from Table 11 and two charts (Figures 8 and 9), community and intranet managers were divided regarding actions or methods they favored or considered to be adoption drivers. As was stated previously, one of the reasons for this disunion could be their different views on the adoption process in general. One point of view was to support "natural" community growth. Promoters of this 'soft approach" encouraged "play" with technology or employed technology that had "affordances"or "attributes" conducive to employees' needs or business needs. Liam Kilminster, Centrica Social Media and Collaboration Manager, provided engineers in the field with iPads and iPhones pre-loaded with the Yammer app: "Suddenly the number of users went up to 5,500. That was when I realized how much our remote employees loved it." According to Robertson, Group Manager Technology Services, Beca, "Uptake was not driven by ICT—it was viral. We introduced a new way of working, but our input was minimal." Anthony, Director of Corporate Communications at Teekay, reflected on the need for policies, "I told people from day one, I am not the police. It is not our job to police; it is our job to trust." Another study participant observed that the adoption was "driven by Corporate Communications, but should be employee-driven, not top down."

There was also a division among 30 % of community managers who mentioned various promotional and marketing events as triggers of adoption. Many community managers, particularly with experience in marketing and public relations, favored promotional campaigns and methods which some of them called "internal marketing." An Enterprise Community

Manager at Cameron emphasized the importance of "a fun marketing and communication plan to roll out the community to employees." 20 % of surveyed community managers thought that "use cases," "success stories" or "showcases" were a preferable way to promote social software use since they are based on real experience and come from users themselves. F. shared, "It is not the usual IT guy telling the rest of the organization why they should be using the social network. These narratives come from our peers." At the same time, one of the participants warned that, "if the Internal Communication team is seen to be pushing them too hard, then we run the danger of building resistance. We need to be there to coach them but not to post on behalf of them" and "use case should not be using as a propaganda tool."

Proponents of "strong community management" (17%) argued that it was necessary to "move to strategic planning from the ground game" (20% listed strategy as the adoption factor). 20% thought policies were necessary. Opinions differed regarding when one should introduce internal social tools usage policy and about how strict policy should be. Some suggested that businesses "must have Governance and Policies in place before you begin"; others believed in "allowances of self -organization for groups instead of rigid policies" or the importance of communicating guidelines "in an elegant way instead of policing."

Roles.

Another factor that was put forward as vital by 68% of respondents could be considered as an "action" too. However, this action was taken by other participants in social software adoption, - leadership team or executives, and thus was classified as a "roles" class of factors. According to Carlson-Jagersma, Wells Fargo: "Our key learning has had executive sponsorship." One of the interviewees identified social software as yet another managerial tool, and as "a machine that our CEO can reach into and pull on levers to make things happen within our

organization." Interesting enough, most community managers who placed "executive buy-in" first place came from hierarchical organizations where traditionally the span of control of the CEO is substantial. Another survey respondent commented that if executives did not use social software, "it [felt] like a parent saying, 'Do as I say,' which adults and children both dislike and fight against." The comparison of an executive with a parent sounds symbolic. It may be interpreted as the persistence of the hierarchical relationship with parents/executives even in organizations that adopted social software and introduced another type of leadership and management. The researchers who studied adoption of other types of technology in the organization (Walton, 1996) associated expectations for top management patronage with centralized organizational structure and found no evidence that executives' support significantly influenced adoption of technology. The author of this study has not collected enough evidence to confirm or decline the findings of Walton's study. 85% of respondents who considered executive buy-in and participation as important factors worked in large hierarchical organizations.

Who else drives adoption besides community managers (CM) and executives? According to CM, they relied on "champions," "advocates," "good content providers," "community stewards"; or "people who can invent their use cases and can drive adoption on their own." Again, some of them appeared naturally and usually were classified as "early adopters" and some of them "[needed] to be recruited" and even "[needed] to be identified before the online community space [was] created."

Some CM described not just how different individuals (their traits, roles and positions in organizations) affected adoption of social software, but how using social software impacted and changed the role and status of an individual. Social software "[was] a means to amplify their voice or share a message." Employees "now find a colleague with the right information in a

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matter of minutes," and these subject matter experts (SME) "end up becoming more visible as 'the expert'. . . their effectiveness rises dramatically."

Organizational Factors

As the literature review has shown (Table 1), for the most part, organizational factors were ignored by the researchers who studied social software adoption. This quantitative part of the study indicated a positive relationship between organizational size, hierarchical/centralized organizational structure, and the time needed for social software to be adopted by organizational members, i.e. adoption rates. Organizational factors are objective factors and could be assessed independently of community and intranet managers' perspectives. However, it was important to discern perceptions and points of view of people involved in implementing SCT. 93% of study participants mentioned at least one of the organizational factors during their interviews, posts, or presentations. However, only 51 % deliberately listed an organizational factor among forces that influence the adoption process. In all cases, the listed factor was "culture." Figure 10 presents the hierarchy of organizational factors based on the percentage of SCT adopters who made some reference to processes, culture, structure, or other elements of an organization.

Figure 10 Organizational Factors Based on the Content Analysis
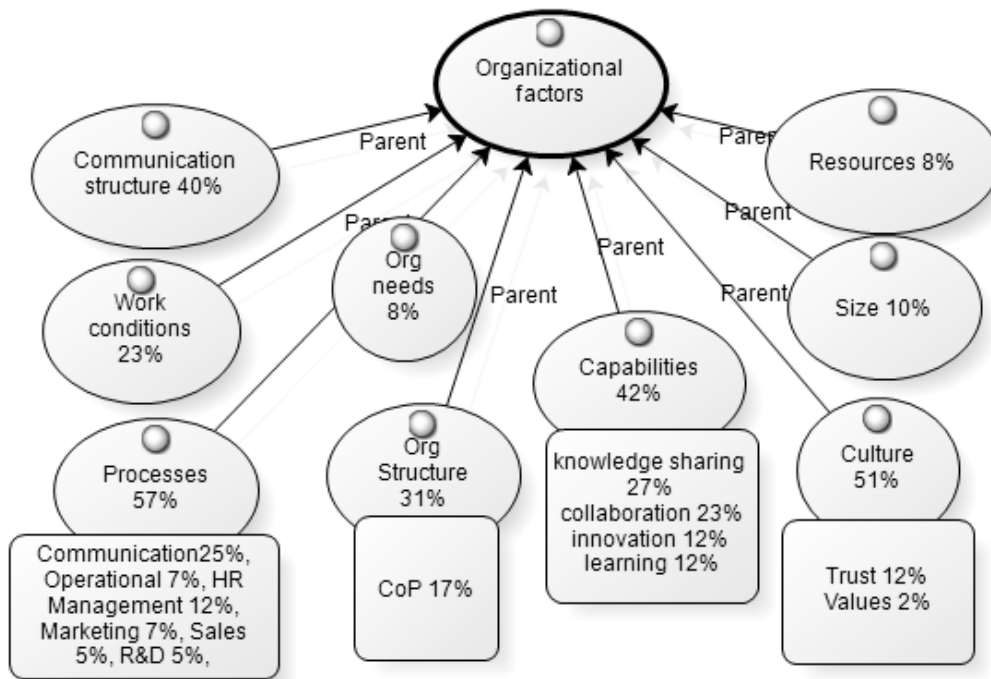
Organizational Culture.

Organizational culture was perceived as a barrier or something that needed to be changed or that will be changed as a result of using social software by the majority of respondents (51%). Here are some examples taken from interviews, presentations, or online posts: "Yammer is a metaphor for culture change (C.); "[the social software introduced] a HUGE cultural earthquake" (P.); "it wasn't enough to simply install the technology. Much of the heavy lifting lay in creating a culture change in the organization" (G.); and "[there was a] new cultural collaboration shift." Community managers mentioned "mergers with other companies," "sudden organizational growth," and the cultural diversity of companies' branches and workforce as problems that social software was supposed to address, but not everybody considered these factors as barriers for the quick adoption of SCT. There are only a few examples of study participants referring to culture as a factor that slowed adoption process. "Because of the culture and size of the organization, there is some time still required for people to be completely comfortable using the tool" and

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"This is a big cultural hurdle we're trying to overcome. Many of our employees are simply uncomfortable with social media in general and feel that it is inappropriate in the business environment."

The existence of "right" culture or "cultural fit" before the implementation was noted only by 20% of people who made references to the role of corporate or organizational culture. So, what is the "right" culture? According to some community managers, it should be "open," "participative," "collaborative," "sharing", or "collegial". There is a perceived importance of culture for the SCT adoption process. Due to the constraints of the survey it was not always possible to unpack ambiguous statements about culture. During interviews, respondents show different understanding of organizational culture and the relationship between culture and organizational and communication structures.

Only five people deliberated on the issue of trust and its role in building relationships or a community using SCT. Community managers encouraged members, including leaders and executives, to be "authentic" and to tell "their personal stories" which was considered "invaluable in building trust." Only one person mentioned the lack of trust as a barrier in the adoption process.

Communication Structure.

Communication structure was not the concept that was widely used by practitioners. Only one person, a Ph.D. student and a former community manager, brought this term into the conversation. Johnson's (1993) definition of communication structure as a "configuration of communication relationships between entities within an organizational context" (p.11) was used as a guidance to coding. The researcher and the coder indexed references to communication difficulties: between organizational units; between administration and regular employees; the

presence of only top-down communication; or to "communication silos." During the interviews

and presentations, the majority of community managers (53%) talked about the role of social

software in supporting or creating new "communication channels", or expressed dissatisfaction

with the old way of communicating. Many practitioners genuinely believe that the

communication structure in their organizations was not a relatively stable structure backed by

organizational structure and ingrained culture, but something that could be changed easily. Only

one person listed the existing communication structure as a factor that slowed adoption of a new

social tool: "there were not many-to-many communication[s]. The switch from one-to-one to

many to-many [was] a challenge."

The practitioners' messages regarding communication structure could be divided into

three groups (Table 12). The first group described a past where a decentralized communication

system was fragmented, had silos, and people were disconnected. Another group told stories

about hierarchical communication structures which were too centralized; communication went

primarily along the chain of command and from the top down. The third group of study

participants emphasized the informal character of the new communication structure supported by

the new media.

Table 12 Types of Communication Structures

Past: Decentralized communication structure	Past: Hierarchical & centralized communication	Past: Formal Present: Informal
"No ability to communicate to everyone in one place." "With no centralized environment for communication and collaboration, people often resorted to the lowest common denominator—email" "With hundreds of offices and events around the world and no central support team, more	"No ability for employees to provide realtime feedback. "breaking down barriers and challenging existing processes and channels" "new ways to communicate with the business and each other" "the virtual space made the hierarchy 'flat'" "Before implementation	"Yammer has proved a natural medium for informal, democratic engagement." "tool [social software]powers instant, informal consultation for global engineers" "Manager now talks

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effective connecting and sharing now takes place in Jive." "Projects, information and people were compartmentalized across myriad systems, leading to all sorts of disconnects, access problems and duplication. "	communication was coming from the top…now ….two way communication" "management and traditional publisher lines of communication that run up and down the corporate structure have been overwhelmed by a new type of interaction that is peer-to-peer. " "It had never happened before to see a leader talking with an engineer." "Allowing communication to flow from the top down, bottom up, and even from side to side."	with people very informally."

Organizational Structure.

As with such factors as "communication structure," organization structure was not considered as an important factor that slowed the rates of adoption. Only 31% of sources talked about different aspects of an organizational structure, listing them as barriers in information and knowledge sharing or communication. People described their organizational structures in similar terms to what they used to describe communication structures. They adhered to the same dichotomies: centralized-decentralized, formal- informal, hierarchical or flat. However, some other antecedents that created the need for better media were mentioned. The researcher performed a cluster analysis using NVivo (Figure 11) and found the following pre-cursors for the intention to adopt social software: rapid organizational growth (acquisition, mergers, extension to new markets); an increase in complexity; functional and cross-functional units formed across geographical and organizational boundaries; informal organizations created such as communities of practice, a prevalence of telecommuting, and a dispersed and mobile workforce.

Figure 11 A Dendrogram of Organizational Structure Factors Cluster Analysis
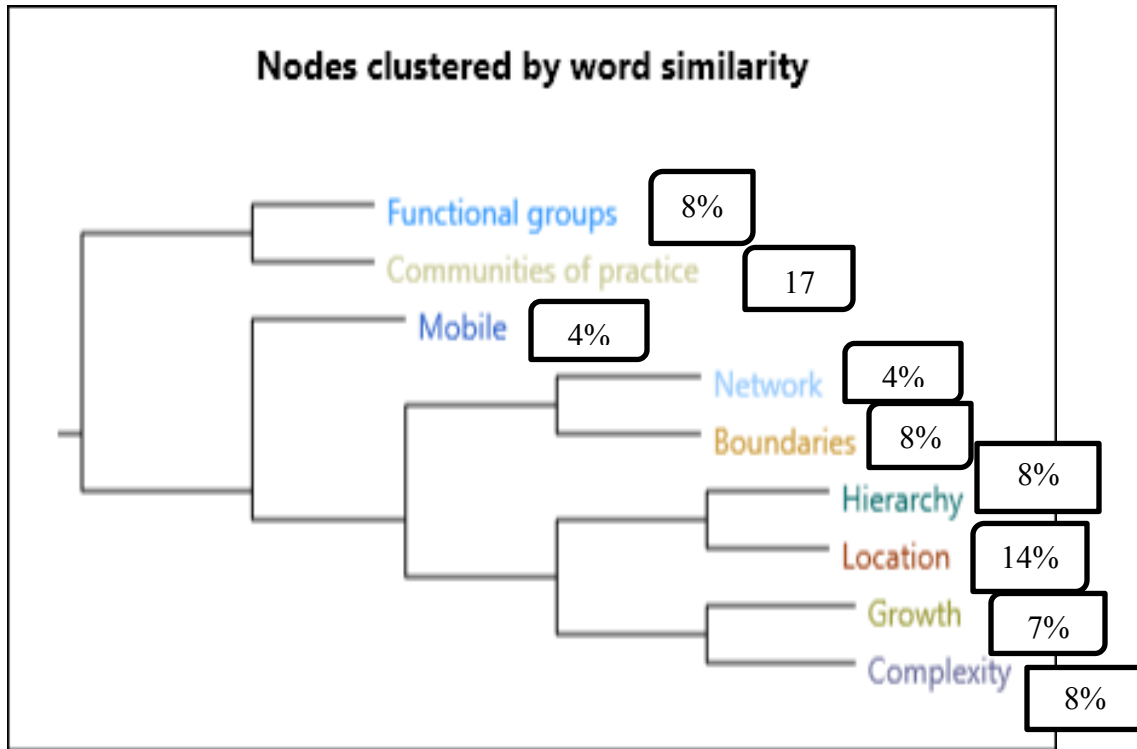
It appeared that at least 31% of intranet, internal communications, and community managers

perceived social software as a tool that would change organizational structure, create "flatter

hierarchies" and permeable internal and external boundaries, and boost the forming of self-

organizing units, networks and communities of practice. In practice, the process of changing

organizational structure is usually slow, which correlates with low engagement rates (average

60%) and longer adoption time (average 16 months) of social software in examined

organizations.

Processes.

In some organizations, social software has been integrated into only one process: the

communication process. In other organizations, the emphasis was on the SCT's broader

application to the redesign and enhancement of most organizational processes, activities, tasks

and workflow. The degree of integration into organizational and business processes could be one

of the reasons behind the fact that only four people acknowledged "the fit to tasks," "integration with a workflow", or "the way people work" as important factors in the process of SCT adoption. According to Gloria Burke, Chief Knowledge Officer and Global Practice Portfolio Leader at Unisys, "The integration [of social into key people and business processes] is where the greatest value is going to come from." As we can observe from the chart at Figure 12, the incorporation of SCT with the "communication process" is the most important success factor (24% of responses). Yet, the integration with HR processes (11%); learning and professional development (10%); operational processes (10%); R&D (8%); and sales and marketing (6%) were considered to be of importance by fewer commentators.

*Figure 12 Cross Tabulation of Processes and Positions of Study Participants*
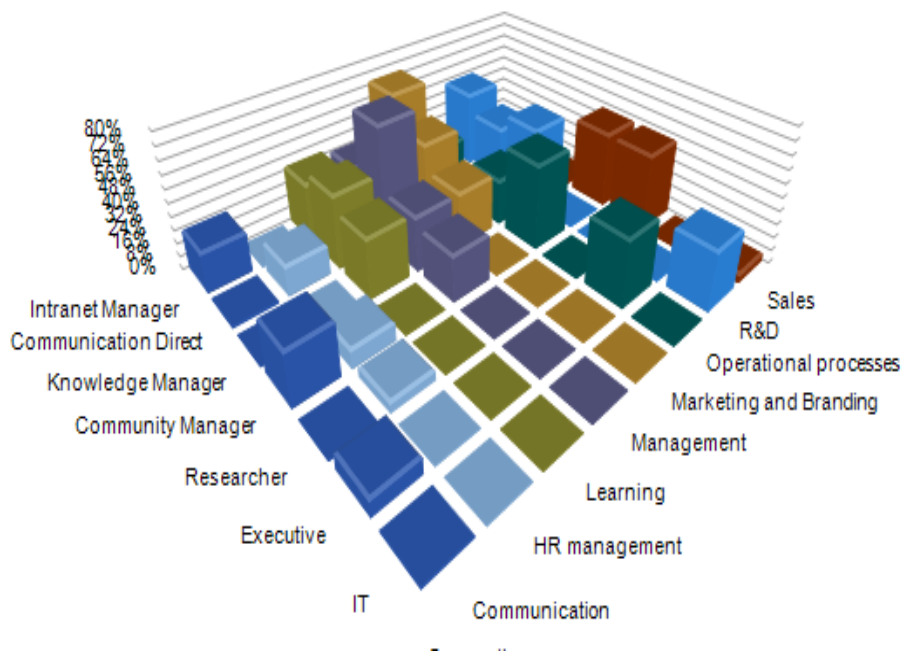
Community managers were apprehensive of the fact that they did not know all the applications of SCT in business processes. Thus, some of them set forth the idea of creating "use cases" and

supporting adoption from bottom up. Xavier Singy, Senior Digital Project Manager at <u>Firmenich,</u> shared: "These narratives come from our peers who are recommending Wave because they really have experienced a better way of working."

Technological Factors

As the meta-analysis of theoretical models of technology adoption (Table 1) demonstrates, scholars consider technology to be a significant factor. During the content analysis, the researcher and the coder assigned categories that were borrowed from these theories and theoretical models, even if some of them could be seen as ambiguous or redundant. Affordances was developed by Treem & Leonardi (2012); perceived usefulness and ease of use originated in works published by Davis (1986), and attributes came from Rogers' "Diffusion of Innovation Theory" ((Rogers, 1962; 1983, 2003). On the other hand, the process of adoption of SCT by organizations could be different from other technologies in the ways that make above mentioned theoretical approaches less relevant, so some new codes have been generated to describe the unknown concepts. Among them are the degree of integration into IT infrastructure and business processes, software architecture/ design, scalability, the level of customization, and richness. Figure 13 is the model that includes all factors with assigned significance based on the frequency of textual references and the amount of sources that listed attributes, affordances and characteristics of technology as a factor.

Figure 13 Hierarchy of Technology Factors
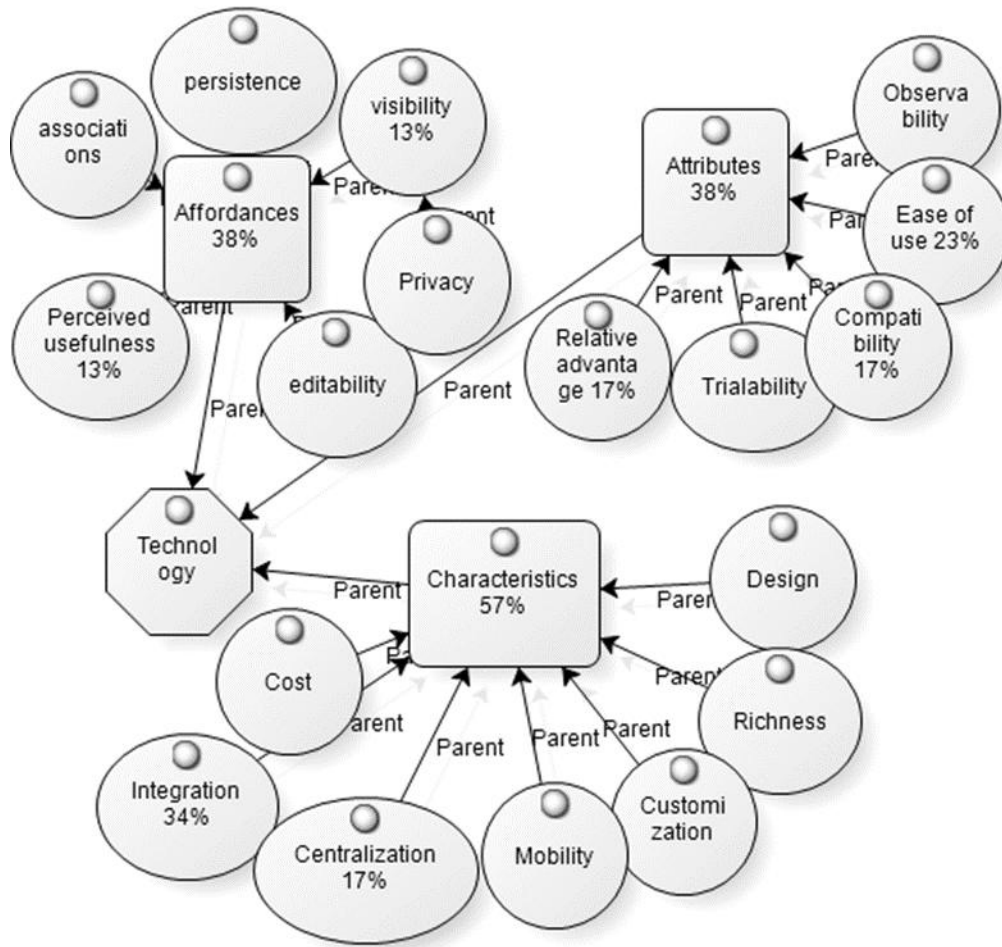
Since many survey participants and interviewees were from organizations that belong to the category of so called "mature users of SCT," a number of them omitted technology from the adoption factors. Selected affordances and attributes of social software played a larger role during the first phases of the adoption, when organizations were making decisions about which software was better suited to their needs and goals. Then Rogers'(2003) attributes such as "trialability," "observability" or "cost" became important. Later on, when employees used technology and tried actively to change the way technology was adapted and even to change the technology itself, other attributes and affordances of technology became imperative. Many

intranet managers (34%) voiced their opinion that the social software had to be integrated not only into knowledge management databases such as Sharepoint or Intranet, but also in other business applications and throughout IT infrastructure. 17% of sources preferred the centralized platform and one sign-on procedure instead of incorporating social features in multiple portals, platforms and applications. 23% listed "ease of use," 13 % signified "perceived usefulness" and 17 % alluded to a "relative advantage" as factors that impacted adoption rates.

A surprising and important result of the content analysis was the discovery that SCT implementers not only disagree about their implementation actions and strategies, but they do not share the same views of new technology. While community managers were seen to be concerned with such activities as social media or CoP policy building or training (37%), not all of them were clear about whether they dealt with a disruptive or a sustaining technology (Christensen.1997). For example, Paul Thomas, Online Communications Lead at the UK professional services firm in the same interview made two statements. In one, he described Jive (social software) as "disruptive technology," which "is breaking down barriers and challenging existing processes and channels." Later on, he enthusiastically proclaimed that it "can help enrich the work that we do." The majority of people surveyed and interviewed emphasized only "positive" sides of SCT and talked about working "to reap business rewards from social networking." Only three study participants acknowledged that this technology could potentially evoke a "power shift" (Cole, personal communication, March, 2014). Liam Kilminster, Social Media and Collaboration Manager at Centrica, observed that not everyone in organizations is ready to change "the normal way of working," the power and control systems, organizational structure", and some are "starting realizing that they cannot control this."

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Summary of Findings

As the content analysis infers, inside of observed communities of practitioners there were different opinions not only about the adoption process but also about the significance of adoption factors. Some views and sentiments could be explained by environments (organizational structure and culture; affiliation with a larger community of practitioners), roles, positions or backgrounds of people who implemented social software. At the same time, the researcher observed that the list of success or impact factors that were offered by adopters was rooted in their general views on technology, the adoption process, and organizational change.

As a result of the content analysis and interpretive phenomenological examination of data, the author offers the classification of factors that practitioners encountered during the process of social software adoption in organizations. The classification is not an empirically tested SCT diffusion model nor a comprehensive hierarchy of all factors, but just a necessary step in the process of scientific investigation of the phenomenon of internal diffusion of social software in organizations.

During the quantitative strand of the study, the researcher measured the strengths of correlation of only four factors from the multifaceted model that were developed as a result of qualitative analysis. All four factors: organizational and communication structures, size and industry affiliation, were mostly ignored by participants of the qualitative research strand. However, at least two influencers, organizational structure and organizational size, had a moderate effect on adoption rates.

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Summary of Chapter Four

In this chapter, the author reports the results of a mixed method analysis of both the qualitative and quantitative data. The qualitative part of the study reveals the variety of factors that may impact successful adoption of social software in organizations. In the quantitative part of the study, the author was able statistically examine the relationship between some of these factors and adoption rates. The following chapter discusses meta-inferences or results of triangulation of findings between two strands: implications and limitations. Also discussed is the importance of the study for research and practice. Chapter Five includes suggestions for further research.

CHAPTER FIVE

In Chapter Four, for clarity of reporting, each strand is presented separately prior to concluding integration of analytic inferences in Chapter Five. Results from both data analyses were integrated in this chapter as meta-inferences. The author presents significant findings from both strands, considers where results from each method agree, complement one another, or contradict one another. She discusses implications of the research to current theory and practice, limitations of the study, and recommendations for future research.

Findings and Conclusions

This study's general research question asked what factors may impact an SCT adoption process in organizations with the intent to clarify the role of a few organizational factors and to design a hierarchy of factors in order to create a model of SCT adoption.

The data was collected from representatives of organizations that had implemented social software internally. The concurrent mixed methods research design was used to collect (digital

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ethnography, archival data, interviews, and surveys) and to analyze (content, interpretive phenomenological and statistical analysis) data.

Meta-inferences

In this section, the author presents two meta-inferences that utilized two techniques for triangulation and the bringing together data from qualitative and quantitative components of the study.

Full Convergence

In the mixed methods study the triangulation and logical reconciliation lead to the situation where findings from QUAN and QUAL strands of the study did not converge fully but complemented each other. Also, the divergence of results was observed. However, it lead to additional discovery, reflection on the phenomenon and resulted in the formulation of framework for a new study.

The qualitative part of the study examines the perceptions and lived experiences of principal players in the implementation of social software in organizations in order to explore factors that have been conjectured and studied previously. The researcher also aimed to discover additional SCT adoption drivers or barriers. As a result of the researcher's content and interpretive phenomenological analysis (IPA), new factors emerged that did not fit preceding technology adoption theoretical frameworks. Figure 14 shows the newly developed hierarchy of SCT adoption factors. Factors that are absent from other theoretical SCT adoption models are highlighted by bold letters. Factors that have not been indicated as significant by study participants but presents in various theoretical models are in italic letters. Factors that have been

deemed to be significant by research subjects are underlined. Factors that have been found to correlate with social software adoption rates are in capital letters.

Figure 14 A Hierarchy of SCT Adoption Factors
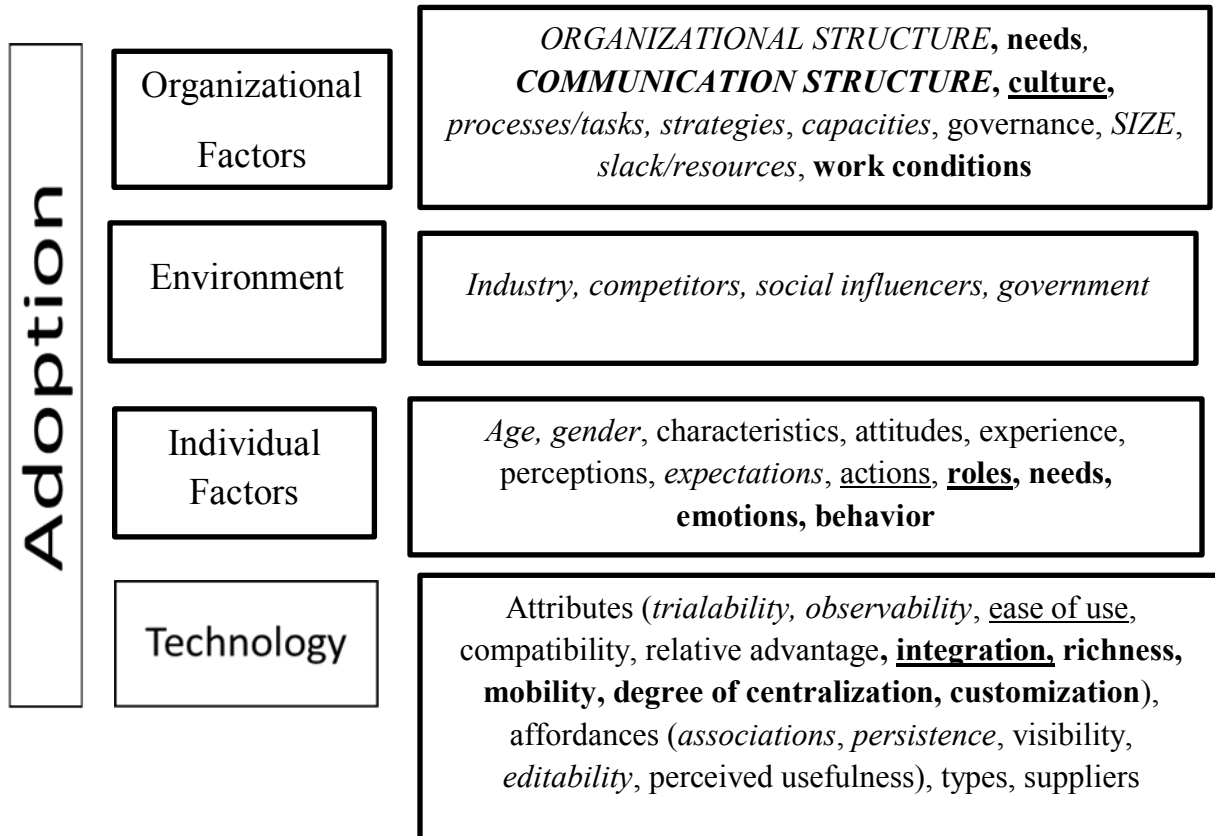
Figure 14 indicates the discrepancies in the results of QUAN and QUAL strands of the study. Factors that were confirmed as statistically significant were not perceived as such by the research subjects of the qualitative study (completed using a community of people who implement social software). One of the reasons for this discrepancy lies in the characteristics of the selected sample of the qualitative part of the research. The content analysis of texts, surveys and interviews portrays the process of social software diffusion as seen with the eyes of individuals who actively enact implementation and usage of SCT. It could be one of the reasons

that the results of the frequency analysis indicate that individuals' views, perceptions, actions and roles outweigh all other sets of factors (technological, organizational, and environmental). Individual factors such as "actions" (66%) and "roles" (80%) dominate over all other individual factors that impede or stimulate software adoption.

Even if such inclusive theories as DOI (Rogers, 1962) and TOE (Tornatzky, Fleischer & Chakrabarti, 1990) incorporate organizational factors in the adoption model, the majority of practitioners (51%) listed only one organizational factor: culture. Community and intranet managers discussed the shortcomings of communication structure and expected social software to improve it. However, only one person mentioned the existing communication structure as a factor that slow the adoption of social software. Organizational structure was not considered as an important factor that incease the rates of adoption either. 31% of research subjects in the qualitative study talked about different aspects of an organizational structure. Yet, they did not list it as barrier in the successful SCT adoption process.

At the same time, in quantitative study, organizational and communication structure and size displayed low levels of correlation with adoption rates (symmetrical communication structure with rho = - 0.309, p. 071) or were moderately correlated. Asymmetrical communication structure (rho = 0.517, p = 0.001) and size (rho = 0.412, p = .001) were factors that moderately correlated with adoption rates. Organizational structure was the largest influence on the duration of the adoption process (rho =0.584, p =0.000). In the end, the regression analysis has shown, the adoption model of social software may include only two statistically significant predictors: organizational structure and size.

Partial Convergence

Since the researcher utilized the concurrent mixed methods design with primarily parallel sampling, the full convergence of data between two independent samples was problematic. Only 20 instances of both qualitative and quantitative data were available for the same cases/organizations. Data from the qualitative and quantitative components of these 20 organizations was integrated at the analysis stage of a mixed methods study. All the data collected on a single case was examined together, focusing attention on cases, rather than on variables or themes, within a study. Data from the qualitative part of the study was quantified, and a quantitative cross-case analysis was performed. This allowed the researcher to find the following patterns.

According to the results of the QUAL strand analysis, 58 percent of community managers and social software implementers agreed that organizational leaders and executives were the most detrimental people for a successful social software implementation. Meanwhile, only 28 percent of respondents considered adoption "champions" or "advocates" actions and roles to be essential. One can assume that in hierarchal organizations the role of top management in introducing and supporting new communication technology could be perceived as vital. After the correlation analysis between the variable "organizational structure" (QUAN strand) and the factor "executive support" (QUAL strand), the researcher found a weak negative and statistically insignificant correlation $(r = -0.110, p > 0.05)$ between these two factors. It means that in a small sample (n=20); there was no statistically significant difference between social software implementers from hierarchical and flat organizations concerning the perception of an executive's support as an important success factor. The difference was a bit stronger in the community managers' perception of the role of so-called "advocates" or support for adoption of social software from the bottom. SCT implementers from less formalized, centralized and

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stratified organizations have rated the bottom up user adoption, or the roles of "advocates," higher ($r = - 0.264, p > 0. 05$).

Based on the limited sample, we cannot conclude that SCT implementers' opinions about using "soft" management methods vs. "hard" management techniques were significantly dependent on existing organizational structure ($p > 0 .05$). Only moderate correlation exists in both cases. Community managers from flatter organizations preferred to play supportive roles, provide training, and distribute "use cases" *($r = .442, p = 0.051$)*. People who implemented SCT in organizations with hierarchal structures tended to use more prescriptive management ($r = -.351, p = .129$), create policies, and to form and govern "communities" from the top down.

The author is well aware that this kind of meta-inference is not accurate or reliable due to the small sample size and the presence of other factors. Among probable other causes that affect strategy and methods are educational and professional backgrounds of communities or intranet managers and influences from consultants, professional communities of practice, and vendors. In addition, the low correlation between the type of organizational structures and preferred methods or SCT adoption's strategy may be an indication of limited understanding of the relationship between communication and organizational structures, or of the role of established structures of power and decision-making in organizations.

Limitations of the Study

Some of the limitations and delimitations have been foreseen by the researcher at the beginning of the study and have been described in the Introduction section of the dissertation. Among them are delimitations that were associated with the nature of research questions and hypotheses, the chosen research design, methods, instruments, the sampling method, and the

types of examined population. However, some limitations became apparent during research or after data were analyzed. The following items are among these limitations:

1. Due to the lack of time and resources, the final sample size was not sufficient to obtain desired validity. It did not match the sample size calculated based on the formulas and tables from Cohen's book (1988). Future research, with larger sample sizes, using the same instruments and analyzing the same variables would be needed to confirm or reject the relationship between organizational size, structure, communication structure, industry affiliation and social software adoption rates.

2. Even if many other SCT adoption factors have been uncovered from the literature review and the ethnographic study conducted by the author, only four of these factors have been measured in the study. Additional factors should be examined, and their relationship with adoption rates established in order to have a statistically reliable SCT adoption model.

3. Ideally such variables as communication structure, organizational structure, and size should be measured with all organizations in the sample going through the same initial adoption phase. The process of adoption in reality is the process of adaptation where social communication technology may change organizational parameters such as communication structure or even organizational structure. Other organizational factors could be affected during the whole cycle of diffusion of technology. This researcher's efforts to find organizations that have acquired social software within the year were limited by social software vendors' willingness to make the data available.

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Theoretical Implications of Study and Recommendations for Future Research

At first, this study served as one of the rare research instances that apply multiple theoretical models (DOI, TOE, TAM and others) to SCT adoption within organizations. This type of technology is fairly new, and its use inside organizations has not been investigated thoroughly. In the researcher's opinion, the complexity of socio-technical systems where SCT adoption is taking place should encourage an integrative approach. This study promotes creating and testing theoretical models that include a variety of factors that stifle or stimulate SCT adoption.

Secondly, this research specifically examined the role of the objective factors in the adoption, with a focus on organizational factors such as structure, size, processes, and capabilities. Most of the prior studies targeted SCT outside of the organizational boundaries or the adoption at the individual level, leaving organizational factors unexamined. This study serves as a validation for the importance of organizational and objective factors in the technology diffusion process. Further studies are needed to explore the impact of other organizational and environmental factors.

Third, this research dealt with two distinct methods of data collection and analysis: qualitative and quantitative. Mixed method research seems particularly applicable for studies of new technology and unknown socio-technical processes that take place in organizations. However, this type of methodology is fairly uncommon in the preceding literature on SCT adoption. Another type of mixed methods design (sequential with extended identical samples and dominant quantitative strand) would be preferable to study social software adoption in organizations. Author also anticipates the benefit of a longitudinal study. By conducting such study, a future researcher may establish connections between different factors. This study

indicates that communication structure has changed by the introduction of social software. However, the further study is required to see if these changes affect organizational structure, culture and capabilities over long period of time. The longitudinal study will also allow to discover which factors are necessary at each phase.

Finally, the adoption factors identified from the field interviews and digital ethnographic methods are unique to research on the adoption and diffusion of innovations. Despite the existence of mature frameworks and models of technology adoption in prior research, there is a dearth of theories and models that focus on SCT adoption in organizations. The hierarchy of adoption factors from this study may serve as a base from which new theoretical models regarding the technology adoption in organizations may be formulated, and new empirical studies that test these models may be conducted.

Implications for Practice

This study has some potentially valuable implications for individuals and organizations struggling with the transformation of their outdated communication technology. With social software, organizational leaders and employees can move away from the hierarchical top-down communication structure to a lateral structure, and can develop such capabilities as knowledge sharing, collaboration, learning, and innovation. However, the successful adoption of social tools is impeded or stimulated by many factors that have not been studied thoroughly by researchers or are ignored by practitioners.

First, the creation of an empirically validated and inclusive SCT adoption model will assist development of strategies of SCT implementations. This study uncovered factors that are perceived as success factors by people who manage SCT adoption processes. In many cases,

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these factors had not been considered or were scientifically proven to impact adoption or engagement rates. Some of them are absent from other technology adoption models or have not received considerable attention or empirical support.

Secondly, three factors were statistically shown to be correlated with adoption rates: the size of the organization, organizational and communication structures (asymmetrical). While these three factors were not equally significant for the overall speed of SCT diffusion, the importance of organizational factors cannot be understated. The continuation of studies of social software adoption in the organizational context will allow practitioners to change their perspectives of the SCT adoption process and to develop assessment and strategies based on influential rather than perceived-to-be influential factors. Specifically, internal communities' and intranet managers, social strategists and knowledge managers may have to not just organize SCT promotion and training, but engage in the process of organizational change that affects work processes and organizational structure.

Third, the study gave a somewhat impartial glimpse of the perceptions and viewpoints of a new professional group: people who build informal organizations, networks, and communities within formal organizations using new media tools. Their mindsets and actions are influential in the adoption and diffusion of social software. Next only to organizational factors, influencers' and adopters' actions are necessary for SCT diffusion to happen. This study may initiate a discussion about professional development, credentials, and the evolving roles of internal community managers.

Finally, an understanding of why in some organizations this type of technology is accepted or rejected allows SCT designers, and IT specialists make necessary adjustments in design, customization, and the implementation process.

Conclusion

This chapter first describes the significant contributions of the study. With the advancements in communication technology, organizations increasingly feel compelled to change the way their members and employees communicate inside organizations. Moreover, companies want to tap the benefits of new media to support such organizational capabilities as innovation, collaboration, and learning. Meanwhile, research on social software adoption and its value is still emerging, and empirical evidence is sparse. This mixed methods research study extends the scope of factors or determinants of adoption and explores the role of organizational and communication structures.

In this chapter, the initial research questions about the hierarchy of SCT adoption factors and the impact of organizational factors are revisited in order to see how they have been addressed in the study. In addition, the implications of this study for technology adoption theory building, methodology, and for practice are identified. In conclusion, having taken into consideration the attainments and limitations of the study, some recommendations are proposed for further research.

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Questionnaire for an employee of the organization

By completing this questionnaire, you will help to determine how new communication technology could be adopted to improve collaboration, learning and information flow in organizations. If you agree to be a part of the study, please fill out the questionnaire (20 questions). The questionnaire is adopted from the IABC landmark study by Dr. Grunig et al. (2002). It takes 15 minutes to finish. The records of this study will be kept private. In any report, the researcher might publish; no private or company-specific information will be revealed to make it possible to identify you or your company. Research records will be stored securely, and only the researcher and the researcher's advisor will have access to the data.

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Contacts and Questions:

For any questions you have about the study, please feel free to contact the following researchers:

Olga Koz, D.M. Candidate

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Dr. Bryan Forsyth, Ph.D., Faculty Lead

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Colorado Technical University

How to complete this questionnaire

This questionnaire uses a numbering system that allows you to give a wider range of answers to questions than do other questionnaires. Your best estimate is sufficient. Do not be overly concerned about the precision of your answers. You may choose any numbers on the scale that you believe describe your organization. A score of 100 is the average score if you agree with the

statement describing your organization. A score of 0 means that you believe that a statement does not describe your organization at all. You may choose the score as high as you want, 400 or 500, to show how much you agree with a particular statement. The following scale should help you.

0……….25…….50……….75…..100……..150…….200…..300…..?

Does not   Average agreement   As high as

describe   with a typical statement   you want to go

1. The first set of statements describes the ways in which communication takes place in organizations. Please use open-end scale to select the number that indicates the extent to which you agree with each statement.

The purpose of communication in this organization is to get employee to behave in the way administrators want them to behave.	
I am comfortable in talking with administrators about my performance	
Most communication between administrators and other employees in this organization can be said to be two-way communication	
My supervisor encourages differences of opinion	
I am usually informed about major changes in policy that affect my job before they take place	
Most communication in this organization is one-way: from administrators to other employees	
The organization encourages differences of opinion	
The purpose of communication in this organization is to help administrators to be responsive to the problems of other employees	
I am comfortable in talking with my immediate supervisor when things are going wrong	
I seldom get feedback when I communicate to administrators	

2. Next, please choose a number on the same scale to indicate the extent to which you agree that each of the following statements describes this organization accurately in comparison with other organizations.

In this organization, important decisions are made by a few administrators alone rather than by people throughout the organization.	
I have a personal influence on decisions and policies of this organization	
It is difficult for a person who begins in the lower ranks of this organization to move up to an important administrative or supervisory position within about ten years.	
I have a great deal of freedom in making decisions about my work without clearing those decisions with people at higher level of the organization.	
I must keep reading, learning, and studying almost every day to do my job adequately.	
My unit has an organization chart, which nearly everyone follows closely.	
In this organization, there are clear and recognized differences between superiors and subordinates. These differences can be seen in larger offices, quality of office furniture, close-on parking spaces or frequencies of superiors and subordinates having lunch together.	
I have a say in decisions that affect my job.	
My actual work seldom deviates from the written job description for my position.	

Permission to use IABC study questionnaire

Dear Dr. Grunig:

I am a doctoral student from Colorado Technical University writing my dissertation tentatively titled, "The impact of organizational and communication structure on the adoption of social media in organizations" under the direction of my dissertation committee chaired by Dr. Bryan Forsyth.

I would like your permission to adopt and use IABC study questionnaire (L. Grunig et al., 2002) in my research study under the following conditions:

• I will use this survey only for my research study and will not sell or use it with any compensated or curriculum development activities.

• I will include a copyright statement on all copies of the instrument.

• I will send my research study and one copy of reports, articles, and the like that make use of this survey data promptly to your attention.

If these are acceptable terms and conditions, please indicate so by signing one copy of this letter and returning it to me either through postal mail, fax or e-mail (a scanned copy).:

Reference:

Grunig, L. A., Grunig, J. E., & Dozier, D. M. (2002). Excellent public relations and effective organizations: A study of communication management in three countries. Mahwah, NJ: Lawrence Erlbaum Associates.

From: James E. Grunig [mailto:jgrunig@umd.edu]
Sent: Wednesday, December 04, 2013 3:58 PM

To: Olga Koz
Cc: Lauri Grunig
Subject: Fwd: Fwd: Permission to use IABC study questionnaire

Dear Olga,

Laurisa Grunig forwarded your message to me since I handled most of the details of publishing *Excellent Public Relations and Effective Organizations.* We included the questionnaires in an appendix to the book because we wanted them to be available to anyone

who reads the book. As a result, we have no objection to you using the questionnaires as long as you acknowledge their source.

Jim Grunig

Questionnaire for an organization's representative

You are invited to participate in a research study. The purpose of this study is to learn how new communication technology could be adopted to improve communication, collaboration and information flow in organizations.

Procedures

If you volunteer to participate in this study, you will be asked to do the following:

• sign an electronic consent form by clicking "agree" button

• answer 6 open-ended questions

Benefits of Participation

There may not be direct benefits to you as a participant in this study. However, your participation will be contributing to the knowledge of organizational communication and ensure that new communication technology support you and your organization. We hope you choose to help us with this research.

Risks of Participation

This study is estimated to involve minimal risk. You will possibly feel uncomfortable answering question about your organization, but there are no personal questions.

Cost/Compensation

There will be no financial cost to you to participate in this study. The study will take only 5 min. You will not be compensated for your time.

Contact Information

If you have any questions or concerns about the study, you may contact:

Olga Koz, D. M. Candidate

Colorado Technical University

Olga.koz@my.cs.coloradotech.edu

Dr. Bryan Forsyth, Ph.D., Faculty Lead

Colorado Technical University

bforsyth@ctuonline.edu

For questions in regards to the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, you may contact Colorado Technical University – Doctoral Programs at 719-598-0200.

Voluntary Participation

Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with the university. You are encouraged to ask questions about this study at the beginning or at any time during the research study.

Confidentiality

The questionnaire doesn't include any personal questions. SSL encryption feature will be enabled. IP addresses will be masked from the survey administrator. All information about your

organization gathered in this study will be kept completely confidential. No reference will be made in written or oral materials that could link you or your organization to this study. Organizational name will be coded and not make public. All collected data will be stored on the researcher's external hard drive and Survey Monkey Server. SurveyMonkey has physical and environmental controls in place to protect data.

1. Please provide us with the name of your organization

2. The amount of employees/members in your organization

3. The year & the month of the social software implementation

4. The highest percentage of active users (users who interact with the system at least once per month) that has been reached so far

5. How long did it take to reach this highest percentage of active users?

6. In your opinion, what are the main factors that affect social software adoption in organization? Please prioritize them

1

2

3

4

5

APPENDIX D

The interview with people who play a crucial role in the process of

implementation of SCT in organizations

1. Tell me about your role in the organization and about the process of SCT
   adoption…

2. How social software has changed your organization?

3. Please prioritize factors that influence social software adoption?